

# THE IRON AGE

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Reading Matter Contents	page 1238
Alphabetical Index to Advertisers	198
Classified List of Advertisers	198
Advertising and Subscription Rates	1253

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PAGE 23



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# THE IRON AGE

New York, Thursday, April 15, 1909.

## New Flather Shapers.

The 20-in. shaper, now being built by the Mark Flather Planer Company, Nashua, N. H., is similar in design to the 16-in. machine of the same make, described in detail in *The Iron Age*, October 31, 1907, but it contains several improvements, notably in the feed mechanism,

head, giving the operator the means of raising or lowering the head for adjustment, or of feeding by hand. As shown in Fig. 1 the tight and loose pulleys are on the machine, belted to the main line, doing away with a countershaft. If it is desired later to equip the machine for motor drive it is only necessary to replace the pulleys on the driving shaft with a rawhide pinion and gear con-

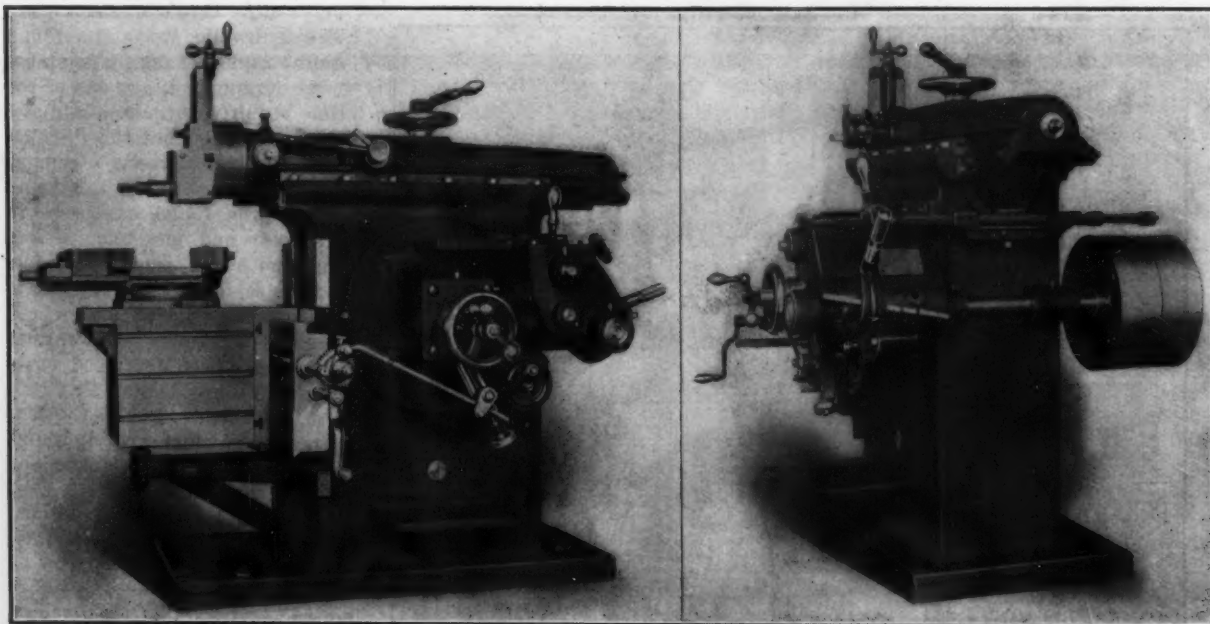


Fig. 1.—Two Views of the New 20-In. Shaper Built by the Mark Flather Planer Company, Nashua, N. H.

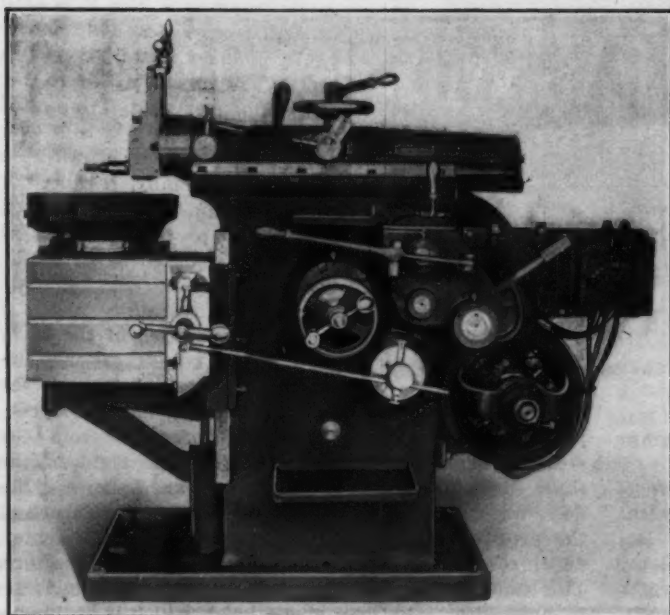


Fig. 2.—The 20-In. Flather Shaper Equipped with Constant Speed Motor Drive.

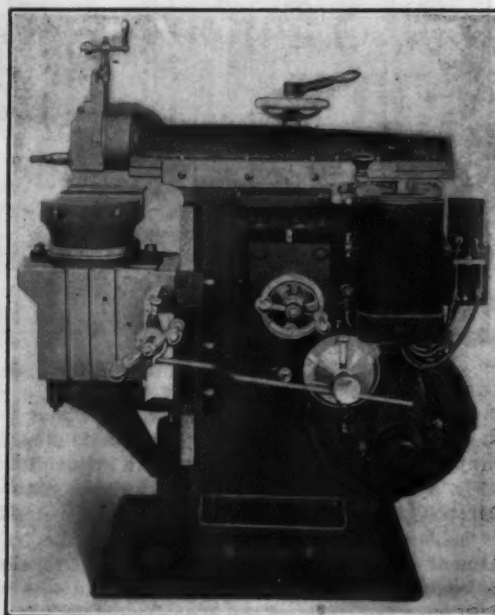


Fig. 3.—A Very Compact Variable Speed Motor Driven Flather Shaper.

ism. A simple but positive means of adjusting the feed of the table on the cross rail, or the cross rail on the column, is obtained through an adjusting screw, seen in Fig. 1, which regulates the length of the stroke of a rod operating the feed ratchet. The machine is seen with the gearing arranged for power horizontal feed of the table on the cross rail. By removing a gear from the cross feed screw to the raising shaft the power vertical feed for the cross rail on the column is obtained. Another new feature is the square for a crank handle cut on the ratchet shaft, which actuates the vertical feed of the

section with the shaft of a motor mounted on the rear of column.

The machine has the general characteristics of the company's new type shaper, including the single pulley gear box drive, V ways, power feed, and cam and stroke adjustments. That the machine is powerful may be judged from the fact that it requires a  $4\frac{1}{2}$ -in. driving belt. It has a 21-in. stroke, and planes 24 in. wide and 15 in. high. The vise takes 12 in. between the jaws. The vertical feed of the head is  $7\frac{1}{2}$  in. The length of the ram bearing on the column is 31 in., the total weight

of the ram  $10\frac{1}{2}$  in. and its length 52 in. The length of the pitman is  $34\frac{1}{2}$  in. Ten cutting speeds are provided through the gear box, ranging from 7.1 to 58.6 cutting strokes per min. The largest shaft which can be passed through the column is  $3\frac{1}{4}$  in. The domestic shipping weight is 3000 lb. and the foreign 3400 lb. The size of base is 23 x 48 in.

Figs. 2 and 3 show the new Flather shaper equipped for motor drive. The former retains the gear box, using a constant speed motor. In this machine, in order that there may be complete control of the ram a friction is introduced between the driving shaft and motor, operated by the horizontal lever seen on the side of machine. This lever has two functions: it changes the positions of the friction from driving to neutral, while the continua-

## High Speed Hydraulic Forging Presses.

Hydraulic forging presses have practically replaced steam hammers in Europe. This change in practice had its beginning in the introducing of such presses in the manufacture of gun forgings, armor plate and heavy general forgings. It was found that the heaviest steam hammers, notably the 125-ton hammer at South Bethlehem, in this country, and many large hammers in Europe, would only do work on the surface of the large ingots employed, overlapping if the blow was heavy, while the center of the ingot would stretch, making the grain large and accentuating imperfections. The reverse was found under the press, for it bulges the sides and ends of the ingots worked on, showing that the metal is worked

uniformly through the mass. The hydraulic press was found quite rapid enough for these large forgings, on account of the time required to manipulate and work the ingot, but the installation of high pressure pumps, accumulators, pipe lines and valves was found expensive in first cost and maintenance and was not rapid enough for medium size forgings. This led to the present type of high speed steam hydraulic installations which have been developed so remarkably by Davy Brothers, Ltd., Sheffield, England. The patents, drawings and all information for America, Canada and Mexico have been acquired by the United Engineering & Foundry Company, Pittsburgh, Pa., which manufactures two types of these machines.

The four-column type, Fig. 1, is built in sizes from 300 to 12,000 tons capacity, and the single frame type, Fig. 2, is built in sizes from 150 to 400 tons capacity. So effectively has this type of machine supplanted the steam hammer that it is stated that but very few hammers over 1500 lb. have been installed in England, Germany, France or Austria within the past 10 years, and those previously operated have been replaced by hydraulic presses, and later by the high speed steam hydraulic type.

In the operation of the Davy high speed type there are involved a press shown at the left of Fig. 1, having a central plunger actuated by water pressure from the steam hydraulic intensifier shown at the right of the same illustration, and having two steam balance cylinders, which are shown on the top of the entablature of the press. There is also a tank shown in the center, which contains air and water under about 60 lb. pressure. This tank is called the pre-filler. The controlling is accomplished entirely by a single lever, which is an important feature of this press. Beginning the operation with the forging dies together as shown in Fig. 1, the operator will first pull this lever toward him, which admits steam to the balance cylinders and lifts the upper cross head to the desired height, allowing the forging to be placed between the dies. This operation forces the water from the press cylinder into the small intensifier cylinder until the plunger of the latter and also its steam piston is in its lowest position, any surplus water is then forced into the pre-filler, the check valve of which is opened by the first movement of the controlling lever. Should the cross head of the press have been lifted too high, the forward motion of the lever will exhaust the steam from

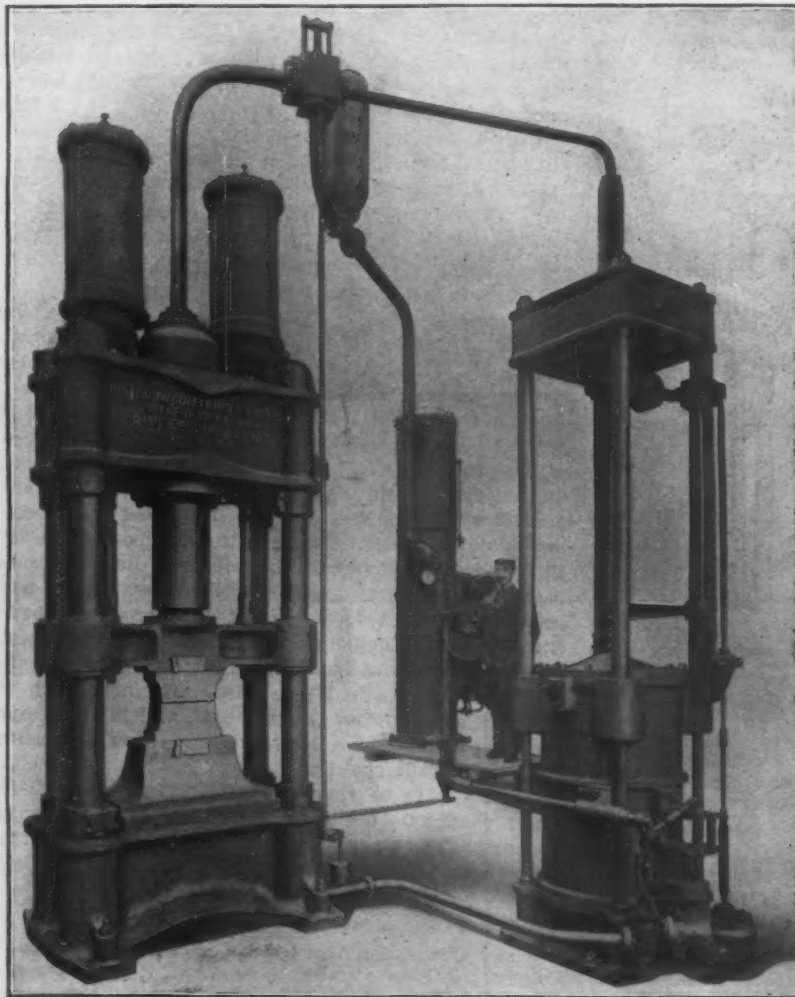


Fig. 1.—Rapid Action Steam-Hydraulic Forging Press, Four-Column Type with Single Cylinder.

tion of the movement operates the brake to stop the ram in any desired position, controlling the momentum.

Fig. 3 shows the same machine equipped with a variable speed motor, the gear box being dispensed with. The machine was designed primarily for the Navy Department, to economize space in battleship repair shops. The constant speed motor driven machine was brought out to meet the needs of the War Department for use in fortifications; several have already been installed in the Philippines and on the American sea coast.

The Department of Agriculture at Washington, in a report issued last week, put the average condition of winter wheat on April 1 at 82.2 per cent. of normal, against 91.3 per cent. on April 1, 1908, and 86.6 per cent. as the average condition for the past 10 years on April 1. Reckoning by the old method, the indicated yield is 436,000,000 bushels, or 1,900,000 bushels below the harvest of 1908. Figured according to the new method, the indicated yield of winter wheat this year is 373,550,000 bushels.



the balance cylinders and permit the upper die to rest on or just clear the forging. At the same time the water from the pre-filler being under light air pressure fills any space in the water system between the intensifier and the press cylinder.

The machine is now ready to commence the work of pressing and the lever is next thrown forward of the center position which places the balance cylinders under constant steam pressure and makes a steam spring. A little farther motion forward of the lever opens the steam valve to the bottom of the steam intensifier cylinder. The piston ascends, forcing the water from the small cylinder into the press cylinder, thus forcing the upper die down and pressing the forging. A back pull of the

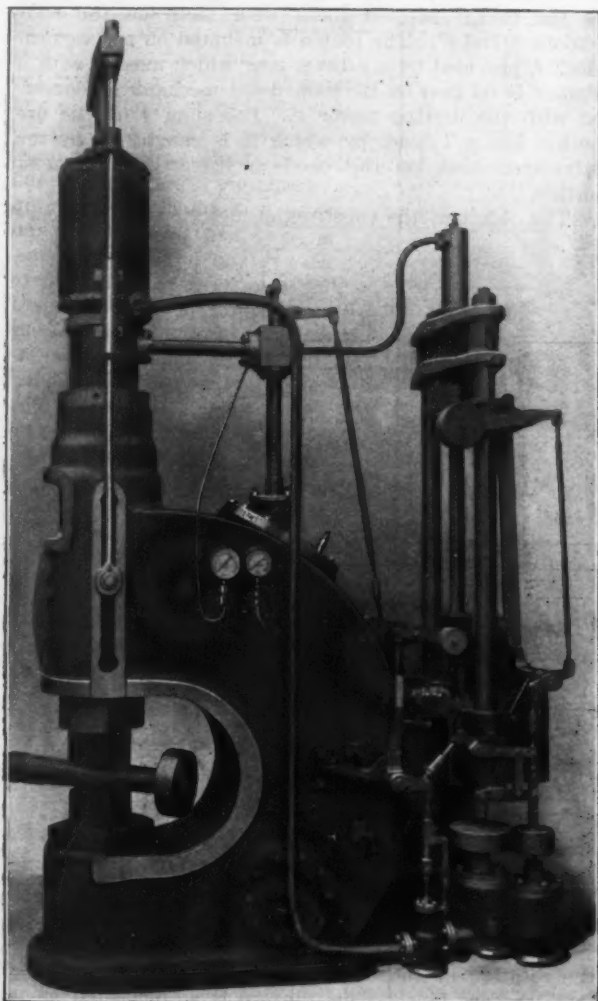


Fig. 2.—Rapid Action Steam-Hydraulic Forging Press, Single Frame Type.

lever exhausts the steam from the intensifier, and the press head lifts enough to clear the forging, a forward stroke presses, and so on. The position of the lever determines the angularity of the flat bar shown on the right of the intensifier in Fig. 1, which is operated upon by the movable roller attached to the intensifier piston rod, and this controls the steam cut-off or stroke of the intensifier, or, in other words, the press head follows the motion of the operator's hand, slow or fast, high or low, and can be operated as fast as 120 strokes per minute for small machines and up to such speeds on large ones as the manipulating of the forging will allow. It will be noticed that the operation requires only the handling of valves under steam pressure, thus avoiding much of the trouble in hydraulic presses. A quick bend in the flat bar referred to serves to throw out the steam and opens the exhaust valve through floating levers independently of the control lever, preventing overstroke of the piston in case of slip or accident to the forging.

The action of the single frame type forging press illustrated in Fig. 2 is essentially the same, but the construction is somewhat modified, as will be seen. The

steam lifting cylinder, there being only one in this case, is placed above the hydraulic pressing cylinder and connects with the plunger by side rods in the manner shown. The intensifier is practically a self-contained part with the press and its control is similar to that already described, from a hand lever located on the side of the frame of the press, as will be seen. The frame of the press itself is used as a pre-filler tank, which makes the machine entirely self-contained and saves space.

A notable attestation to the merit of the process is the German Government specifications for steel forgings worked by rolls, hammer or press. Forgings made from rolled or hammered steel must have the initial section at least eight times the finished section, while those made from pressed steel are required to have only four times the finished section. It is claimed that the high speed steam hydraulic presses will do double the work with one-half the steam consumption as compared with the steam hammer. No especially massive foundations are used, such as a steam hammer requires, and all noise, vibration and destruction to the machine is eliminated, thus making a large saving in the cost of up-keep. This type of high speed steam hydraulic press, besides being used for all classes of forging, is well adapted for die forging, flanging, pressing and shearing.

**The Hadfield's Steel Foundry Company.**—The annual meeting of the shareholders of Hadfield's Steel Foundry Company, Ltd., was held in Sheffield, England, March 23. Sir Robert Hadfield presided. After the reports were read it was decided that in addition to the interim dividend of 1 shilling per share of August 22 last a further dividend of 2 shillings per share, with a bonus of 6 pence per share, be paid. Sir Robert Hadfield made an address, stating that the year 1908 had been one of great trade depression and its effects had been seen in most balance sheets. Owing to the enormous increase in the productive power of the country, competition had been increased to an extent the like of which had never been experienced before. He stated, however, that had as trade had been English manufacturers had not been tested to the extent to which manufacturers in the United States of America had been tried. The depression was not only national, but international, and in this respect was probably unique. However, there was the comfort that while trade could not always be very good, neither could it always be very bad. He felt sure that before long a change for the better must take place. Regarding the company's balance sheet, Sir Robert pointed out that it now had the very handsome sum of £398,000 in liquid assets, as against £379,000 in 1907.

**Lake Champlain Iron Ores.**—Wetherbee, Sherman & Co., Inc., 2 Rector street, New York, have put out an attractive booklet containing illustrations of their iron mines and separating plants at Mineville, N. Y., and giving analyses of their ores and of those from the "21" group of mines of the Port Henry Iron Ore Company and of the Cheever Iron Ore Company, Port Henry, N. Y., for which they are sales agents. The ores illustrated include "Old Bed 21" lump ore for puddling and basic open hearth furnaces, "Old Bed 21" ore for blast furnace use, Old Bed concentrated ore of 65.84 per cent. iron, 0.72 per cent. phosphorus, 3.02 per cent. silica and 2.36 per cent. lime; Old Bed cobbled ore of 63 per cent. iron, 1.18 per cent. phosphorus, 3.50 per cent. silica and 4.50 per cent. lime; Harmony ore, a coarse, granular ore, electrically cobbled; Cheever concentrated ore of 65.15 per cent. iron and 0.101 per cent. phosphorus, and special high grade concentrates running as high as 71 per cent. in iron and as low as 0.017 per cent. phosphorus. Harmony tailings containing 50 to 60 per cent. silica are offered as equal to crushed granite and as making concrete 25 per cent. stronger than sand. Illustrations are given of miners' houses built of concrete blocks from these tailings.

G. K. Hooper, engineer, will remove his office this month to the City Investing Building, 165 Broadway, New York.

## Ore Distribution at the Base of the Blast Furnace.

The efforts of blast furnace engineers to secure the proper distribution of stock as it is charged into the furnace have been almost entirely confined to special forms of top construction. Various distributors, bearing the names of their inventors, are in use on blast furnaces built in the past dozen years. To some of these there is the objection that they are complicated, and, therefore, that the wreckage resulting from an explosion would be costly both in damage and loss of time. The difficulty of access for adjusting any derangement of top apparatus is also a factor, and the hot gases given off at the top have not conduced to the efficient working of some of the devices offered for the cure of faulty distribution. The problem of automatic charging in the main is to dump a skip containing ore of different sizes in such a way that the lumps and fines will be distributed equally around the furnace bell. The use of a cylindrical bucket, as at the four furnaces of the original Duquesne group, has proved its efficacy as against the skip, but the skip, owing to the rapidity with which it handles material and its economy in operation, is still

Fig. 2. The scale mechanism is carried between the platform *a* and the car frame *b*, the platform being suspended from the frame. The platform is supported on beams, connected by brackets to the scale levers. The latter are bolted at one end to the car body, while the movable ends are connected with multiple levers fulcrumed to the overhanging beams *c*, which are carried on the car body. The movable ends of the multiple levers are connected to a scale lever which is fulcrumed to the overhanging beam *d* on the car body, the moving end of the scale lever being connected by a rod with finger beams located in the beam box *e* on the larry car. On the platform *a* are rotating bucket supports *f*, provided with vertical shafts *g*, secured in the central bearings in the platform so as to be rotatable. At *h* are antifriction rollers. Spur gear teeth in the peripheries of the bucket support mesh with teeth on the spur pinions *k* and *k'*. The pinion is mounted on the vertical shaft *l*, provided with a bevel gear which meshes with a similar bevel gear on the slow down mechanism connected with the driving motor *o*. The stem *r* on the ore bucket has a T-head, by which it is caught up by the bifurcated hook on the carriage traversing the hoist incline.

The object of the construction described is to secure

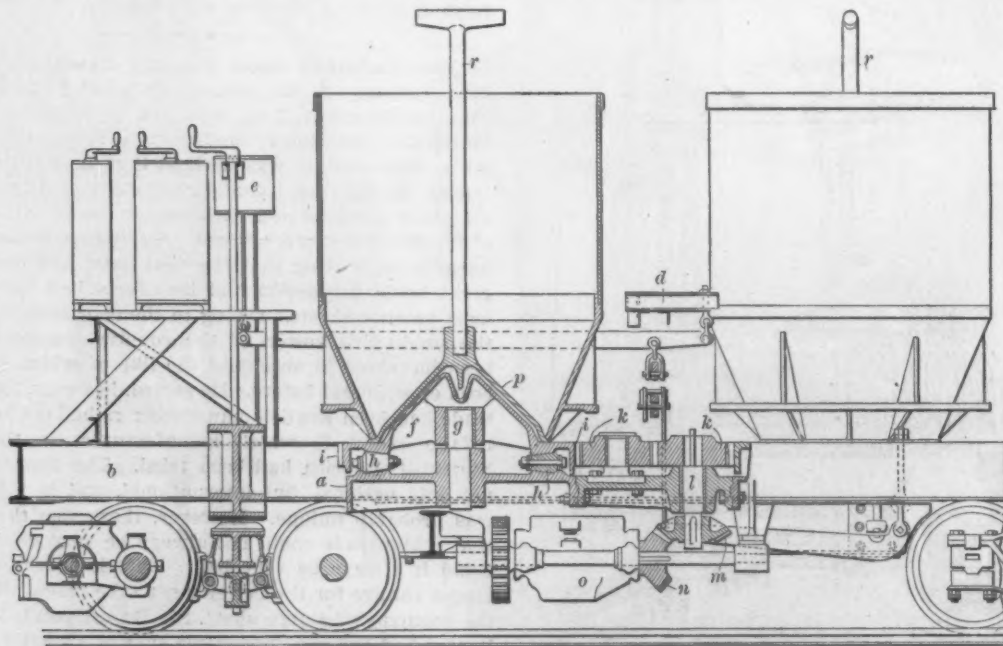


Fig. 1.—Scale Car and Mechanism for Rotating Ore Buckets to Secure Proper Distribution of Ore.

generally employed in spite of the high expense often entailed for furnace linings.

The long runs of the original Duquesne furnaces on their linings are well known. These results were apparently influential in the adoption of the Neeland bucket for a Youngstown, Ohio, furnace, together with a revolving platform carrying two ore buckets at the base of the furnace, which permitted of the rapid transfer of the loaded and the empty bucket at the foot of the incline.

A blast furnace charging apparatus on which Ambrose N. Diehl, blast furnace superintendent at the Duquesne Works of the Carnegie Steel Company, has obtained a patent transfers the distribution of the stock to the base of the furnace. Mr. Diehl's method has been introduced at the new Duquesne furnaces and a description of it as given in the patent specification will, therefore, be of interest. The ore bucket is the same as that used at the older Duquesne furnaces—one of the features of the Neeland charging apparatus as described in *The Iron Age* of March 25, 1897, page 5. It is a cylindrical sheet of  $\frac{3}{4}$ -in. steel and as carried on the scale car it rests upon a conical bottom in the apex of which a stem is fixed from which the whole is suspended. The electrically driven scale car, which traverses the track underneath the ore bins, carries two of these buckets, as shown in Fig. 1 and in the end view,

the rotation of the ore bucket while it is being filled from the ore bins. Thus the ore is so deposited as to form a spiral column of coarse material and a similar column of fine material. This alternation in spirals, of coarse and fine material, has been found to be the uniform result of the rotation of a cylindrical receptacle into which material was discharged from a chute during such rotation. The more revolutions the bucket makes the nearer equal will be the proportions of coarse and fine material in each vertical plane passing through the center of the bucket. After the first bucket carried on the car is filled the procedure is repeated with the second bucket and the car is then run to the foot of the hoist incline. The top construction at the new Duquesne furnaces is understood to be the same as at the old furnaces, the Neeland apparatus being used. As the loaded bucket is placed in position on the top of the furnace hopper the bucket bottom is lowered, permitting the ore to flow out in an annular sheet into the hopper. No part of the distribution is accomplished at the top of the furnace except such as is secured through the use of baffle plates.

Where the buckets are not continuously rotated on the scale car while being filled they are made to rotate sufficiently to bring them into different positions between the time they are placed on the car after having been emptied at the furnace top and the time when they are



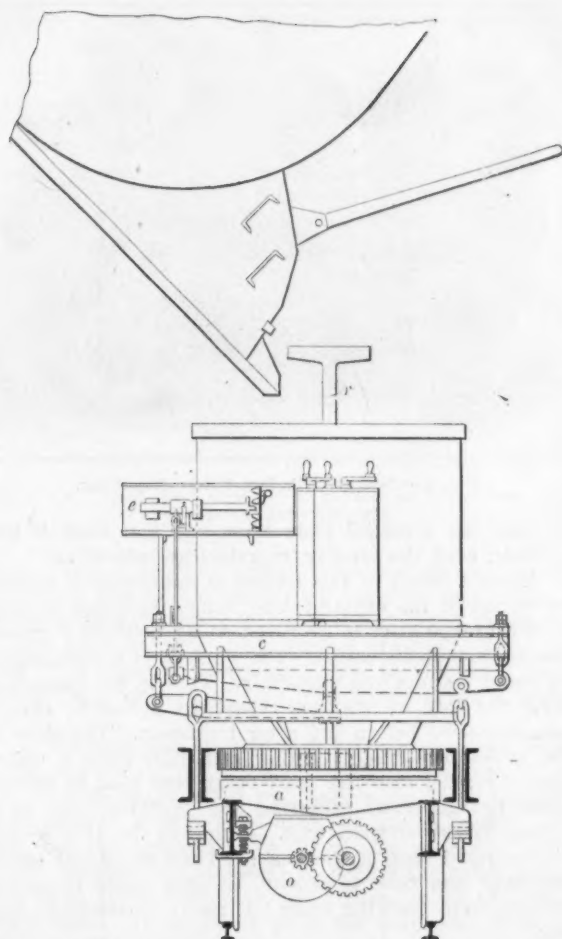


Fig. 2.—End View of Scale Car Equipped with Drop Bottom Bucket.

again in position to be lifted by the bucket carriage on the hoist incline. In this way a change is made in the angular position of the imaginary vertical plane dividing the coarse, lumpy ore from the finer ore in the bucket, as well as a change in the relative position of the lumpy ore in successive charges emptied into the top of the furnace.

#### A Chicago Special Train for the Foundrymen's Convention in Cincinnati.

Arrangements have been made by the Associated Foundry Foremen of Chicago and vicinity for transportation accommodations for those desiring to attend the annual meeting of the American Foundrymen's Association and allied organizations, to be held in Cincinnati, May 17 to 22. A special Pullman train over the Pennsylvania lines will leave the Union Depot, Madison and Canal streets, Sunday, May 16, at midnight, arriving at Cincinnati at 8 a. m. This schedule will afford an opportunity for out of town foundrymen, without unnecessary loss of time from their business, to be present at the opening sessions of the American Foundry Foremen's Association and the Foundry and Manufacturers' Supply Association, which will be held May 17. Other organizations, including the Milwaukee Association and the Tri-City Association of Rock Island, Davenport and Moline, have signified their intention of sending delegations to accompany the Chicago members.

It is expected that one of the largest and most instructive exhibits of foundry appliances ever shown in conjunction with these meetings will be provided by the Foundry and Manufacturers' Supply Association. The value of these exhibits to foundrymen as a means of acquiring useful information concerning the progressive features of the foundry business, is fully appreciated by the trade, and no pains will be spared on this occasion to eclipse all former efforts. A pleasing programme of entertainment has been arranged for visiting members of the several associations by committees representing the

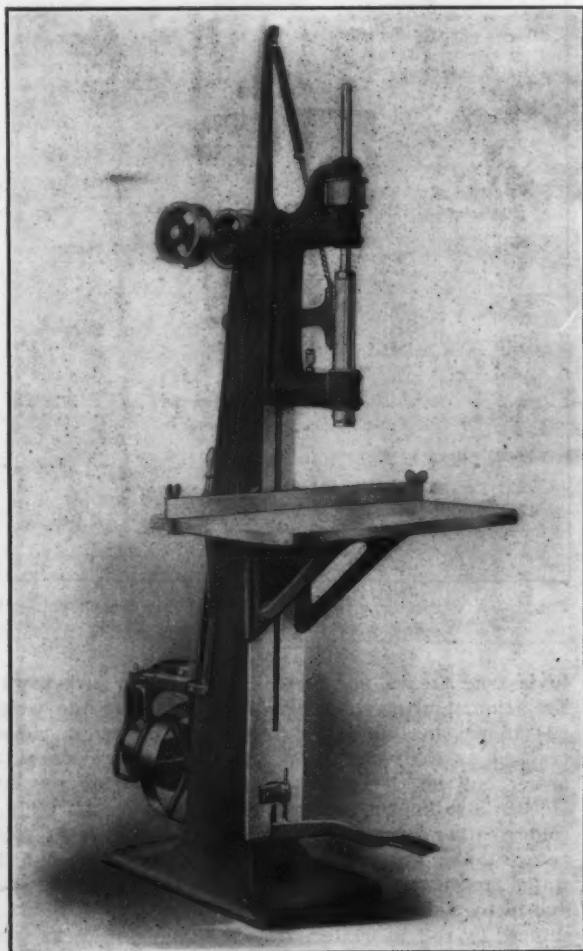
foundrymen and civic authorities of Cincinnati. The papers read and discussed at these meetings are devoted exclusively to topics of educational interest along technical lines and are designed to bring out information of practical value in foundry practice. It is expected that the auxiliary associations already formed will be supplemented at this time by the organization of the American Metal Platers' Association.

Special conveniences for the care and comfort of ladies accompanying the Chicago delegation have been provided. Those desiring reservations on the special Pullman train should communicate with Eugene W. Smith, chairman, 434 Franklin avenue, Austin Station, Chicago.

#### An Improved Kidder Boring Machine.

A new boring machine for woodworking, brought out by R. E. Kidder, Worcester, Mass., is shown in the illustration. The treadle operates a lever arm fulcrumed at the back of the column and carrying a gear segment engaging a rack cut on the back of the spindle quill. The spindle is balanced by a coil spring attached to an arm on top of the frame, making it self-contained. The head has a vertical movement of  $6\frac{1}{2}$  in. Two stops regulate its travel, so that any limits within the range may be had. One adjustable stop is on the lower arm of the spindle head, controlling the downward stroke, while the stop just above the treadle controls the upward stroke.

To provide for tightening the driving belt the bracket carrying the driving pulley has a vertical adjustment of 2 in. on the column. The face of the bracket and the column are tongued together to preserve alignment during adjustment, which is obtained by loosening the clamp-



An Improved Wood Boring Machine Built by R. E. Kidder, Worcester, Mass.

ing bolts and moving the bracket downward by means of a screw, which tightens the belt. The spindle is of crucible steel, running in babbitt boxes. The table is 20 x 36 in. and has a vertical movement of 21 in. It is counterbalanced by a weight inside the column.

## Cylinders Repaired by Autogenous Welding.

BY HENRY CAVE.

Broken automobile engine cylinders can be divided into three classes, which cover at least 90 per cent. of them, and the majority can be satisfactorily repaired by means of the oxy-acetylene flame. The following describes such work as done by the Autogenous Welding Equipment Company, Springfield, Mass., with Davis-Bournonville apparatus.\*

Cylinders with cracks are sometimes brazed, but owing to the necessity of heating the whole cylinder to a good red heat, to even up the contraction strains, so as not to crack when cooling, the bore of the cylinder is likely to be warped. Such a job usually requires much finishing, as the spelter and flux spreads considerably and is hard to remove. Also, owing to the dirt and rust being deposited in the crack, it is difficult to get a braze below the surface. The large amount of heat used will sometimes crack the cylinder somewhere else.

### Water Jackets Broken by Freezing.

The largest class of cylinder breakages is mainly due to carelessness or misfortune, probably in most cases the former, and results from allowing the water in the jacket

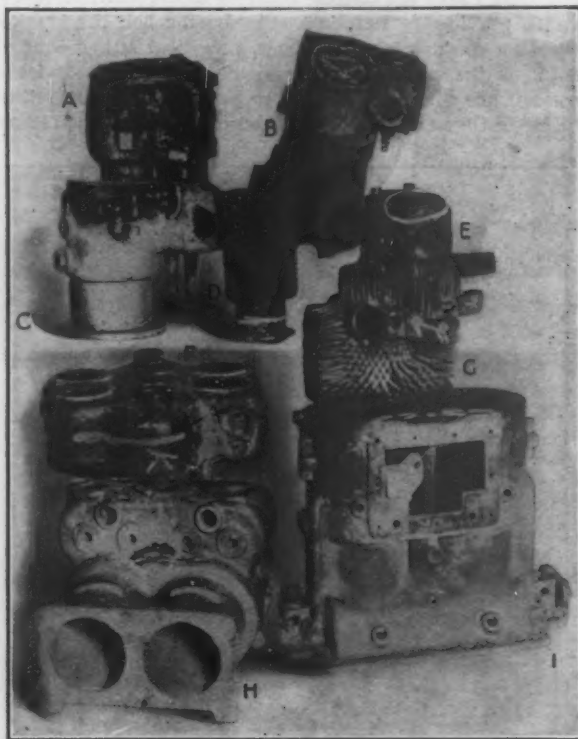


Fig. 1.—A Group of Automobile Engine Cylinders Repaired by Welding with the Oxy-Acetylene Torch.

to become frozen up, breaking the water jacket wall. This cannot always be termed carelessness; the writer has known an automobile to have all its water jackets cracked as early as the middle of October, when the owner had no thought of such a thing being possible. He has also known of cars being stalled on the road in cold weather when the driver opened the drain cocks before going for help, but upon his return found the water frozen, with the usual results; this probably was due to too small drain cocks. Frequently when a car is shipped by rail in winter, although the drain cocks were opened, its cylinders have cracked, due to pockets in the water system and sometimes very small ones which did not drain. Cylinders cast from the same pattern will generally break in the same place from freezing. Often the break causes a piece of the wall of the water jacket to be entirely detached, and the breaks occur so near alike, in similar cylinders, that it would be possible

\* For a description of this apparatus see *The Iron Age*, January 7, 1909.

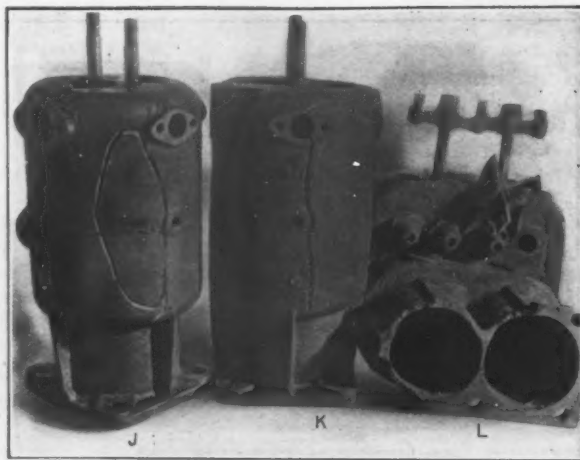


Fig. 2.—Broken Cylinders Before Repairing.

to take the detached piece from one and weld it into another, even the smaller irregularities coinciding.

When a break of this nature is autogenously welded, by means of the oxy-acetylene flame, the crack or edge of the broken part is prepared so as to leave a groove nearly through the metal. The whole part is then heated to about 500 degrees uniformly. This is not enough to warp the bore, as has been repeatedly proved by careful measurements before and after treatment. The sides of the groove are fused together and filled from a rod of cast iron; the resulting weld being very neat in appearance, not generally requiring any finishing, and is as strong as the original wall. Owing to the intense and concentrated heat of the flame it fuses the metal before the heat has time to spread, so that there is seldom trouble from cracking when the metal contracts in cooling.

Cylinders A, F, H and I, Fig. 1, were welded in this manner. The weld on F, which was along the chalk line, was ground off so that all signs of it are eliminated. A piece of the water jacket had been knocked out of cylinder H when the casting was being smoothed up ready for painting at the factory; the successful welding, however, saved the cylinder. A crack along the top corner of I is shown welded. J and K, Fig. 2, show common types of breakages which are being satisfactorily welded up every day. Both are grooved out ready for welding.

### Cylinder Walls Broken.

The next class of breakages, in order of frequency of occurrence, are those in which the wall of the cylinder, combustion or valve chamber is broken or cracked. These are usually due to freezing, but some are due to the designer making a flat surface too large without adequate ribbing to support the intermittent pressure of the explosion. Others occur from breaking of the connecting rod, allowing the piston to strike the top of the cylinder. Damage due to this cause is more frequent in two-



Fig. 3.



Fig. 4.

Before and After Completing a Repair in the Cylinder Wall, to Reach Which It Was Necessary to Cut Through the Jacket Wall.



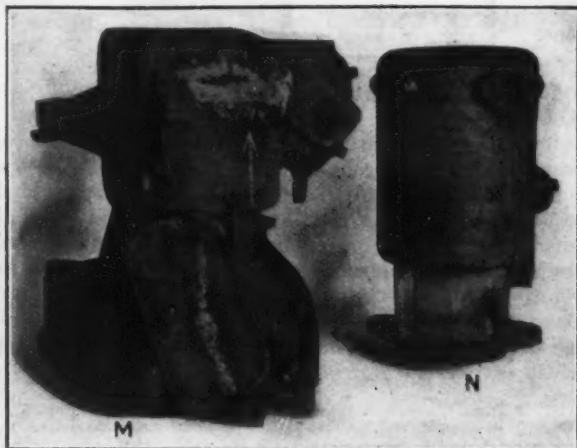


Fig. 5.—A Jacket Wall Closed with a Piece of Sheet Steel and a Broken Flange Repaired.

cycle engines, as the deflector on the piston readily punches a hole in the combustion chamber wall. Fig. 3 shows a cylinder having this defect, and Fig. 4 shows the outside after welding. This kind of break also often occurs from foreign substances, such as the head of a broken valve, getting between the piston and the cylinder head.

These breakages are the most difficult to repair, as it is necessary to cut out a section of the water jacket to be able to work on the inner wall, unless the break happens to be opposite a large hand hole. It can be readily seen that it is impossible to save the casting when the break occurs between two cylinders or behind the valve chamber, as it is impossible to reach these parts with this small flame. If the crack is in the bore care must be taken to weld to only within a sixteenth of an inch of the bore, or the finished surface will be spoiled; the crack left in this way is of little importance. Sufficient metal is built on the outside so that there is no doubt about the strength. After welding the break the section of the water jacket which was removed is welded back in place.

As it is often impossible to determine the length or exact locality of the cracks before cutting away the jacket and it is desirable to remove as small a section as possible, additional pieces quite frequently have to be cut out, necessitating welding a number of small pieces back in place when finishing the job. This is sometimes impossible, and a sheet steel substitute must be hammered out and welded in place. With care this can be shaped so as to coincide with the piece removed, and cannot be detected when complete. A case of this kind is shown at B, in Fig. 1. The part cut away is shown satisfactorily replaced by sheet steel at M in Fig. 5.

The water in freezing will often crack both the water jacket and cylinder wall. The former, being readily seen, is generally thought to be the full extent of the damage, particularly as it is practically impossible to make a test until the crack is repaired. The work may then have to be cut out if further defects are found. This was the case in the cylinder shown at A in Fig. 1. The right angle crack was first welded. The break ex-



Fig. 6.—Another Repair Made by Cutting Through the Jacket Wall.

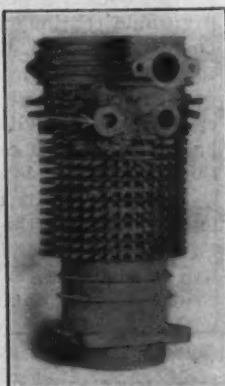


Fig. 7.—An Extra Igniter Boss Added to a Cylinder.

tending from below the hole shown cut out across the other side was next welded and the cover replaced. A similar break then being discovered in the other cylinder, the relief cock bosses for both cylinders were entirely detached and later welded back in place.

The cover plate on the cylinder M, shown in Fig. 5, was also broken in freezing, at the same time as the cylinder wall was broken, and is shown welded up.

Fig. 6 shows a cylinder after welding a crack 8 in. long, located at the corner of the combustion head. The part cut out of the water jacket is also shown. It will be noticed that this involved cutting through a supporting foot. The part successfully welded back in place is shown at C in Fig. 1.

The cylinder E, shown in Fig. 1, had a hole to be welded for which it was thought necessary to remove the section shown chalked. A large addition, however, had to be cut so as to take care of a crack running down the side; the two pieces removed were welded together before they were replaced.

#### Broken Flanges.

The next series of breakages in point of number are those in which all, or a portion of the flange, which

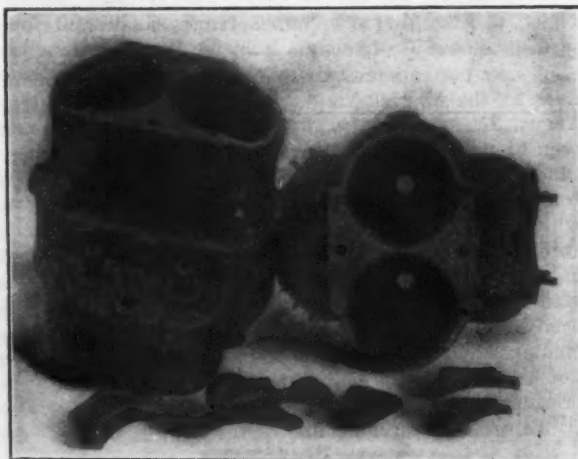


Fig. 8.—Cylinders with Broken Flanges Before Repairing.

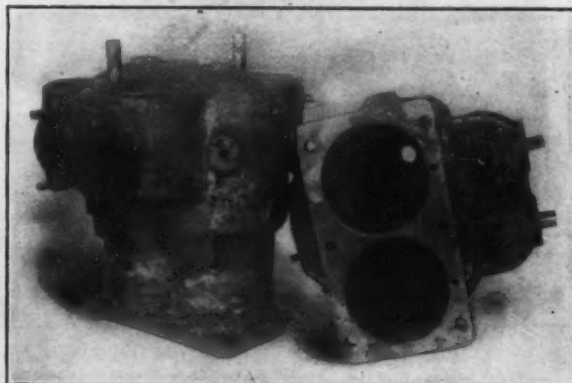


Fig. 9.—The Same Cylinders Repaired.

holds the cylinder to the crank case, is broken away, either due to there being insufficient metal to withstand the strain or to carelessness in assembling. These breakages occur in two ways: the wall of the cylinder may be broken away or part of the flange may be broken off. In the latter case it is an easy matter to make the repair, but when the break runs through into the bore of the cylinder considerable care is required. It is first necessary to consider whether it is desirable to weld in the bore, which would then require machining, or at any rate filing out, or only groove and weld from the outside to within a sixteenth of an inch of the face, sufficient metal being added to the outside to insure ample strength. This, of course, leaves the crack on the inside, which can, however, be smoothed down, and is not objectionable in a repair job, as it does not interfere with the satisfactory operation of the motor in any way. As cast iron is added to the outside, the shrinkage often draws up the corners slightly out of line. This can be taken care of

by trimming off the face if most of the corners have been welded on a single cylinder, as is shown at D in Fig. 1, but if only one corner is welded on, as in N, Fig. 5, or several cylinders are cast together, as in Figs. 8 and 9, cast iron must be added to the face and can then be filed off level, as has been done in Fig. 9. It would also be necessary to add metal to the face when welding the break shown at L in Fig. 2.

#### Other Repairs.

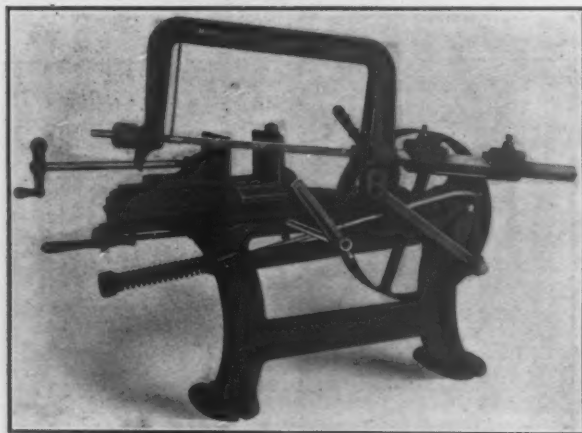
In addition to these three classes there is a large variety of other breakages, no two of which are alike, that can be remedied successfully by the oxy-acetylene torch, such as broken inlet and exhaust flanges, holes knocked through the barrel of the cylinder by broken connecting rods, welding on of broken supporting brackets, as shown at G in Fig. 1, the arm shown having been entirely detached.

In addition to this, considerable welding can be carried out for the manufacturer, such as the welding on of additional bosses for dual ignition systems, as shown in Fig. 7, building up bosses that did not fill in casting, welding porous spots which show up after machining, or adding metal anywhere it may be required.

#### The Marvel No. 2 Hack Saw.

A new power hack saw, built upon the same general lines as the Marvel No. 1, described in *The Iron Age*, August 27, 1908, but designed for heavier work, has just been brought out by the Armstrong-Blum Mfg. Company, Chicago. In addition to its heavy construction, the tool contains several new features, the most important of which is a quick acting heavy vise arranged to swivel both ways, thus permitting the insertion of material in angular positions for cutting angles on either side. The vise rests upon a flat top table from which it may be easily removed. A T slot in this table affords means of clamping and holding work of irregular shape that cannot be conveniently held in the vise, thus materially increasing the range of work that may be cut by the saw.

To secure greater rigidity of the saw, especially when



The Marvel No. 2 Power Hack Saw, Made by the Armstrong-Blum Mfg. Company, Chicago.

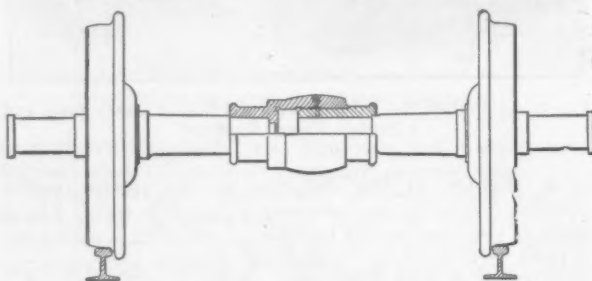
using short lengths, a brace rod extending from the front blade clamp to the upper part of the frame has been introduced. The feed lever at the top which also serves to raise and lower the saw and hold it at any position, is provided with a tension thumb screw to regulate the feed when sawing medium and light material, and when operating upon such work is left engaged. The machine has a stroke adjustable from 4 to 6 $\frac{1}{4}$  in. with capacity for cutting 6 x 6 in. material on the long stroke and 8 x 8 in. on the short stroke. It uses saw blades from 12 to 17 in. long, operates at a speed of 50 to 70 rev. per min. and weighs 260 lb.

March was the month of heaviest anthracite production in the history of the trade. The marketable output in the United States was 6,332,474 tons, an increase of 1,566,316 tons over March, 1908, and 535,307 tons more than was ever produced in that month. The largest pre-

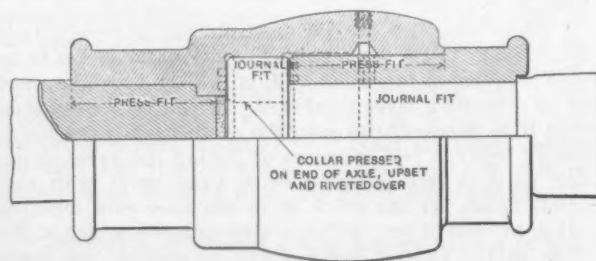
vious month's shipments, in October, 1907, were 6,108,065 tons.

#### The Seabrook-Box Differential Car Axle.

Of the many differential railroad car axles that have been made the Seabrook-Box axle is declared to be the only one put together without bolts, screws or rivets, and to be stronger than a rigid axle. It is claimed to be at least 50 per cent. stronger, and the contention is borne out by the illustrations, which show the construction so plainly that a description is unnecessary. The Western Engineering Company, 501 Herman W. Hellman Building, Los Angeles, Cal., has recently equipped one of the



The Seabrook-Box Differential Railroad Car Axle.



Detail Section of the Axle Joint.

Santa Fé Railroad's oil cars with these axles, and has made exhaustive tests in the San Bernardino yards. The car is now in service between the Olinda oil fields in California and Victorville, Cal. This necessitates the car running over the Cojon Pass, the other side of the Sierra Madre mountains on each trip, which is considered one of the most difficult sections of road to operate in the United States, as the grades are a trifle less than 4 per cent., and curves are very numerous. It has been found that on a perfectly tangent track there is constant movement in the differential joint of the axle.

The car was run around the sharpest curve in the San Bernardino yards at the greatest possible speed. Previously the flanges of the wheels were chalked and it was found that the chalk was not rubbed off after passing over the curve several times. This curve is so sharp that it is impossible to run the large locomotives around it. One of the company's claims for the axle is an increase of braking efficiency of at least 25 per cent. To test the braking action the car was run at high speed and then the emergency brake was applied. This was done several times, and it was found that all the wheels of the locomotive would slide, but that the wheels of the car would continue to roll, showing that not only is the traction increased, thereby increasing the efficiency, but the differential axle allows each wheel on the tangent to find its natural bearing on the rail, doing away with the crowding and grinding of the flange. This was most apparent on this test car. The flanges very seldom touched the rail at all under high or low speed.

The company is now equipping the idle axles of an electric car on the San Bernardino Valley Traction Company's line. It is expected that at least 20 per cent. will be added to the efficiency of the car on any of the roads. It will permit the car being driven around curves with at least 20 per cent. less power, as it breaks up the four corners of the curves by having two loose wheels on each truck. It is also intended to equip a train of 30 100,000-lb. capacity coal cars on the Santa Fé road and a passenger train.



## The Philadelphia Foundrymen's Association.

The regular monthly meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club on the evening of April 7. Horace L. Haldeman occupied the chair. Walter Wood, chairman of the Committee on Pig Iron Specifications, reported that an extended conference had been held between members of the committee, a subcommittee of the American Foundrymen's Association, represented by Henry A. Carpenter, Stanley G. Flagg, Jr., and Herbert E. Field, and a subcommittee of producers, representing the American Society for Testing Materials, composed of Noah H. Swayne, 2d, Edgar B. Cook and G. F. Eldridge. A number of important suggestions were made and the following report was presented:

### Proposed Standard Specifications for Buying Foundry Pig Iron.

It is recommended that foundry pig iron be bought by analysis, and that when so bought these standard specifications be used.

#### Sampling and Analysis.

Each carload, or its equivalent, shall be considered as a unit in sampling.

One pig of machine cast, or one-half pig of sand cast, iron shall be taken to every 4 tons in the car, and shall be selected from different parts of the car.

Drillings shall be taken so as to fairly represent the composition of the pig as cast.

An equal weight of the drillings from each pig shall be thoroughly mixed to make up the sample for analysis.

In case of dispute, the sample and analysis shall be made by an independent chemist, mutually agreed upon, if practicable at the time the contract is made.

It is recommended that the standard methods of the American Foundrymen's Association be used for analysis. Gravimetric methods shall be used for sulphur analysis, unless otherwise specified in the contract.

The cost of resampling and reanalysis shall be borne by the party in error.

In order that there may be uniformity in quotations, the following percentages and variations shall be used. (These specifications do not advise that all five elements be specified in all contracts for pig iron, but do recommend that when these elements are specified the following percentages be used.)

SILICON.	SULPHUR.	TOTAL	PHOSPHORUS.	MANGANESE.
0.25 allowed	Maximum.	CARBON.	0.150 allowed	0.20 allowed
either way.	% Code.	Minimum.	either way.	either way.
% Code.	0.04..Sa.	% Code.	% Code.	% Code.
1.00..La.	0.05..Se.	3.00..Ca.	0.20..Pa.	0.20..Ma.
1.25..LaX.	0.06..Sl.	3.20..Ce.	0.40..Pe.	0.40..Me.
1.50..Le.	0.07..So.	3.40..Cl.	0.60..Pl.	0.60..Ml.
1.75..LeX.	0.08..Su.	3.60..Co.	0.80..Po.	0.80..Mo.
2.00..Li.	0.09..Sy.	3.80..Cu.	1.00..Pu.	1.00..Mu.
2.25..LiX.	0.10..Sh.		1.25..Py.	1.25..Mh.
2.50..Lo.			1.50..Ph.	1.50..Mh.
2.75..Lox.				
3.00..Lu.				
3.25..Lux.				

In case of phosphorus and manganese, the percentages may be used as maximum or minimum figures, but unless so specified they will be considered to include the variation above given.

#### Base or Quoting Price.

For market quotations an iron 2 per cent. in silicon (with variation of 0.25 either way) and sulphur 0.05 (maximum) shall be taken as the base.

The following table may be filled out, and may become a part of the contract. "B," or base, represents the price agreed upon for a pig iron running 2 in silicon (with allowed variations of 0.25 either way) and under 0.05 sulphur. "C" is a constant differential to be determined at the time the contract is made. (It is recommended that "C" be 25 cents per ton.)

This table is to be used for settling any difference which may arise in filling a contract, as explained under Penalties and Allowances, and may be used to regulate the price of a grade of pig iron which the purchaser desires, and seller agrees to substitute for the one originally specified. Silicon percentages allow 0.25 variation either way. Sulphur percentages are maximum.

Silicon.					
Sulphur	.....3.50	3.00	2.50	2.00	1.50
0.03.....	B+5 C	B+4 C	B+3 C	B+2 C	B+C
0.04.....	B+4 C	B+3 C	B+2 C	B+2	B
0.05.....	B+3 C	B+2 C	B+C	B	B-C
0.06.....	B+2 C	B+C	B	B-C	B-2 C
0.07.....	B+C	B	B-C	B-2 C	B-3 C
0.08.....	B	B-C	B-2 C	B-3 C	B-4 C
0.09.....	B-C	B-2 C	B-3 C	B-4 C	B-5 C
0.10.....	B-2 C	B-3 C	B-4 C	B-5 C	B-6 C

#### Penalties.

In case the iron, when delivered, does not conform to the specifications, the buyer shall have the option of either refusing the iron or accepting it on the basis shown in the above table, which must be filled out at the time the contract is made.

#### Allowances.

In case the furnace cannot for any good reason deliver the iron as specified at the time delivery is due, the purchaser may

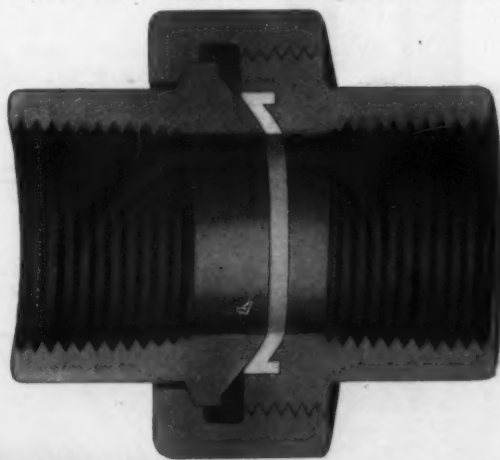
at his option accept any other analysis which the furnace can deliver; the price to be determined by the base table above, which must be filled out at the time the contract is made.

On motion of Mr. Wood it was decided that at the May meeting of the association the various points of the report shall be taken up and discussed in detail; previous to which a copy shall be sent each member, and that an invitation shall be given to all the producers and consumers of pig iron in this and the adjoining territories to attend the meeting and participate in the discussion, so that a concrete opinion of the report can be given at the annual convention of the American Foundrymen's Association later in the month.

The paper for the evening's discussion was on the tariff issue, by Col. Albert Clarke, secretary of the Home Market Club, Boston, Mass. A report of it is given on another page. In the discussion which followed W. W. Hearne and H. L. Haldeman made brief remarks regarding the efforts of the pig iron producers to have the duty on pig iron placed at \$3 per ton, instead of \$2.50, as scheduled in the Payne bill, and it was believed that they would be successful. Colonel Clarke was tendered a unanimous vote of thanks for his very interesting paper. After adjournment luncheon was served in the dining room of the club. At the next meeting of the association Charles E. Forster of the Taylor Instrument Company, Rochester, N. Y., will present a paper describing a new pyrometer which that company has brought out.

## The Webco Pipe Union.

The pipe union illustrated, known as the Webco, has as its essential feature bronze to iron seats, with no cast iron contacts, designed to give a perfectly tight joint at the back as well as on the face of the ring. The nickel-bronze seat ring is inserted under hydraulic pressure, making practically one solid piece of the two metals and is proportioned to give the correct amount of metal to effect an equalizing contact on the bearings; any further expansion of the bronze has a compensating effect to distribute the pressure equally. The ring is held in place



Section of the Webco Union Made by the F. W. Webb Mfg. Company, Boston, Mass.

by thick retaining walls of iron, and is let into the iron at a sharp angle to the plane of the seat to provide a wedging effect when the ring expands, so that the joint cannot open up. The ring does not project into the bore of the body portion of the union beyond the bottom of the threads, so that if the end of the pipe is screwed clear in it cannot disturb the location of the ring and force it out of position. The separation of the two metal ends is accomplished without leaving a recess at the seat where sediment might collect. It will be noted that there is a ball seat at the back joint as well as at the face joint. The two surfaces have the same contour. The pressure that brings the ends of the union together is equally distributed, the principle of the inclined plane being applied to both joints. The ends of the union have flats to provide a wrench hold.

The union is made in 10 sizes, from ¼ to 3 in., by the F. W. Webb Mfg. Company, 50-60 Elm street, Boston, Mass.



## A 200-Ton Fairbanks Track Scale.

According to the Hepburn act of 1906 the responsibility for the weight of the carload at its destination lies with the railroad originating the freight. The Pittsburgh & Lake Erie Railroad, which is a large shipper of coal, desire to install such a weighing outfit as would not only insure correct weights for itself, but by its massive design and substantial construction would impress its customers with its undoubted accuracy in case of disputed weights. The railroad had but recently installed eight track scales equal to any in the country, but as it wished to introduce every refinement of accuracy and insure great durability as well, it asked the Fairbanks Scale Company, St. Johnsbury, Vt., to confer with its engineer, A. R. Raymer, relative to the design and installation of a scale which would effect this result beyond all question. It was desired to weigh loaded cars passing over the scale at a speed of 5 miles an hour and register the weight of each car as it passed. By referring to Fig. 1 it will be seen that as the cars pass on a scale of the ordinary type each wheel strikes a blow when passing over the joint in the rail. Moreover, as each truck reaches the position A its entire load bears

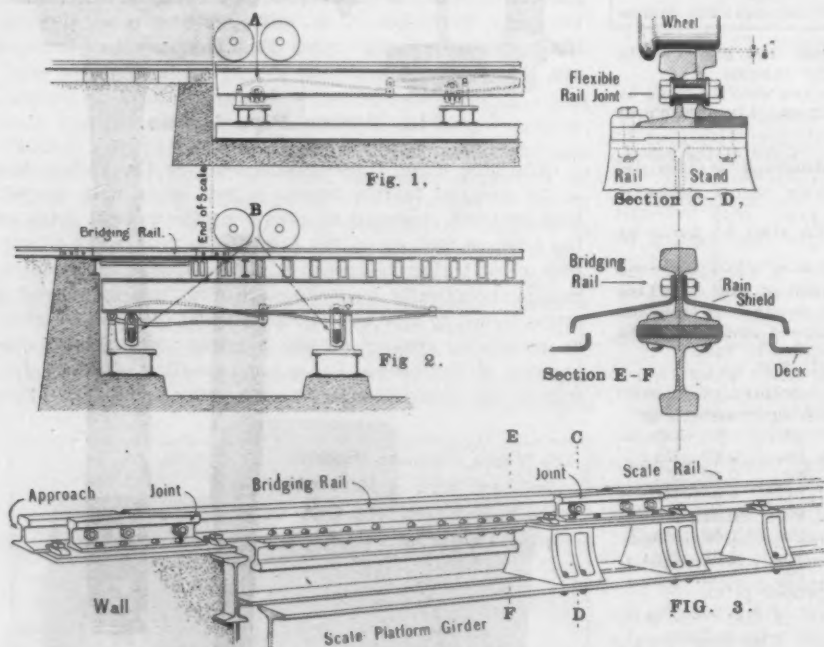
on the first section of the scale. This brings severe punishment upon the first section.

In Fig. 2 the scale rails end at the same point as in Fig. 1, but the scale itself is longer and the section is set back under the approach, so that the first contact of the load B on the scale is divided between the first and second sections. To ease the load on the scale and avoid the blow Mr. Raymer designed a flexible rail joint. This is shown in Fig. 3 and consists of a rail bridging over the space between the approach and the scale rail. The tie plates are short rails with one side flattened. The joint is shown in section C-D and is made by a piece of gas pipe passing loosely through both rails, with washers on each end of this pipe drawn together by a bolt so as to allow a little play between the washers and the rails. The middle of the tie rail is graded up slightly higher than the main rails, so that the wheels will climb up over the rail joint without a shock.

Patterns for scale levers were perfected of a design which would not spring under the most severe conditions. Two I-beams are used under each rail to reduce the deflection. By these means the vibration of the scale under a moving load has been eliminated and the beam rises gradually when in use. This permits the Streeter-Amet automatic recording device to be attached so that

carload weights may be printed directly on the way bills. The framing is of steel and consists of a grillage of I-beams supporting the deck. This is of  $\frac{1}{4}$ -in. steel plate covering the entire surface of the scale and extending down over the foundation enough to turn the water. This covering is self-supporting, so that accumulations of snow or dirt do not affect the scale. A pair of dead rails rest on the deck to accommodate traffic which is not to be weighed. The live or weighing rails rest on stands which are supported by twin I-beams.

These beams and rails are set to a grade of six-tenths of 1 per cent. to allow the cars to travel at the proper speed, but the scale itself is set level, as it must be to insure correct results. Wherever the stands project through the deck, rain shields are provided similar to those shown in section E F, Fig. 3.



Figs. 1 and 2.—Comparison of the Ordinary and Improved Connection of the Main Track and Scale Rails. Fig. 3.—Details of the Joint.

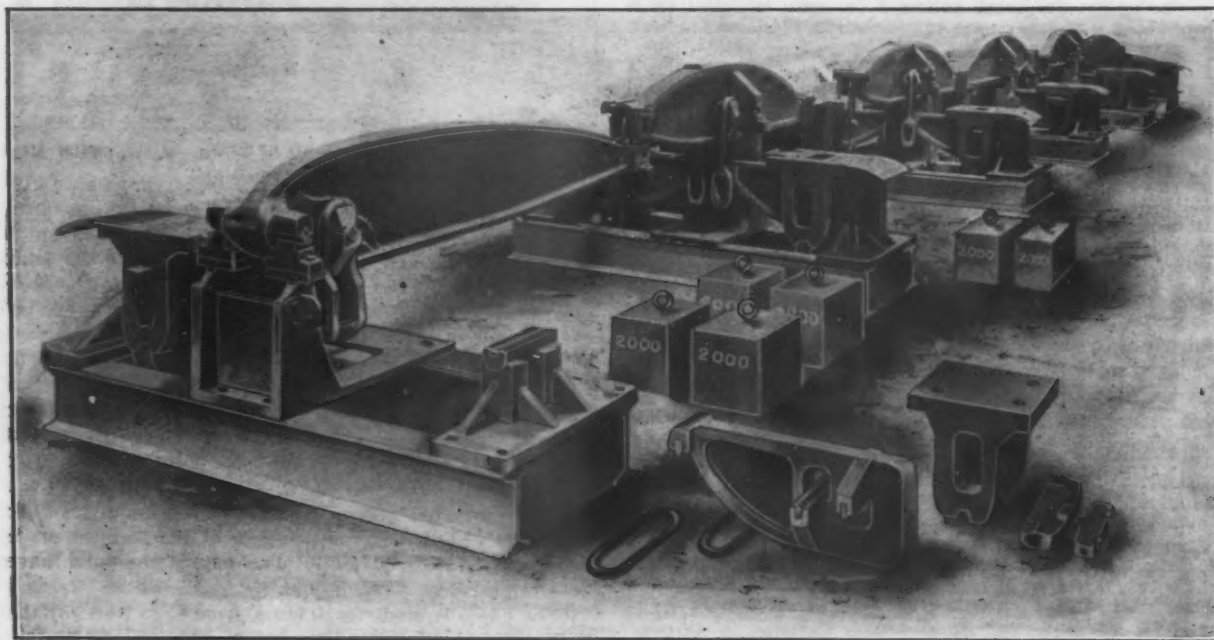


Fig. 4.—The 200-Ton Track Scale Partly Assembled on the Erecting Floor of the Fairbanks Factory.

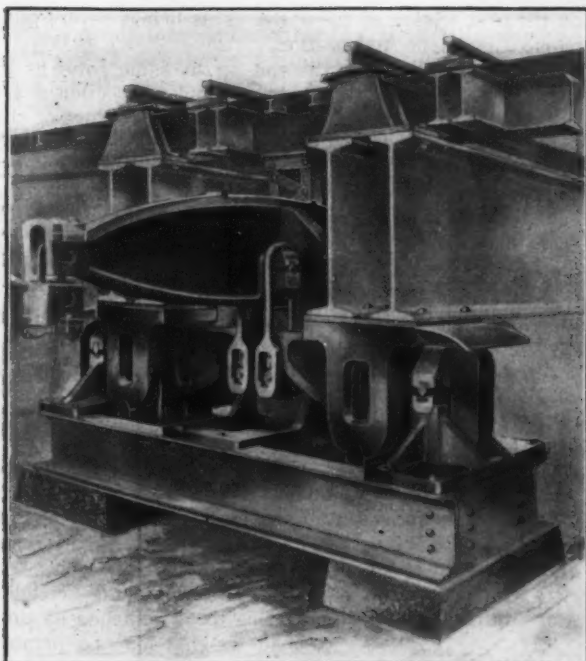


Fig. 5.—Detail of One of the Scale Bearings.

The pit is deep enough so that a man can stand upright, and wide enough outside of the scale irons so that he may walk down on each side to examine and clean the bearings which are all accessible.

The scale is of the Fairbanks type, with recently patented improvements. Instead of the load resting on a knife edge in the main levers it is suspended from the pivot, so that the bearings cannot grind on the edge, but will swing back into position if displaced. This is accomplished by a bearing block resting along the entire length of the pivot edge and suspending a wrought iron link from each end of the block. Underneath the lever and parallel with the bearing block is a cross bar supported by these links.

The bearing itself is shown in Fig. 5 and is a single casting which straddles the lever and rests on each end of the cross bar, so as to swing freely in all directions. Usually the platform girder rests directly on this bearing, but in this case grading blocks of varying thicknesses are inserted to give the rails proper pitch.

This scale has a nominal capacity of 200 tons, with an ample factor of safety above that. The total length of the platform is 67 ft. 4 in., and the effective length 52 ft. 10 in. Fig. 4 shows the parts of the scale partly assembled on the erecting floor in the factory. This is undoubtedly the most remarkable scale installation in the United States, if not in the world.

#### The Nelson Combined Ratchet Drill and Wrench.

A tool designed to perform two different operations is the Nelson improved combination ratchet wrench and drill, made by the L. H. Brown Mfg. Company, Carlinville, Ill. The distinguishing features of this machine are the adjustable jaws and reversible ratchet, the former having an extreme opening of  $2\frac{1}{2}$  in. It is so constructed as to afford a positive grip on a drill shank, as in Fig. 1, or a nut, as in Fig. 2, and adjustment to various sizes is easily and quickly effected. Its capacity is further extended by removing the feed screw, when, as shown in Fig. 3, a clear opening through the wrench is left, allowing the wrench to slip over a long threaded bolt and engage the nut without interference. Since the head of the tool rotates around the bolt with the nut, it makes no difference whether the thread be long or short. Besides the jaws for nuts up to and including  $\frac{3}{4}$  in. capacity, an extra pair of jaws is furnished with each wrench to take bolts from  $1\frac{1}{4}$  to  $2\frac{1}{2}$  in.

Fig. 1 shows the tool operated as a ratchet drill, in which work the adjustable jaws are especially advantageous, since they afford a grip on any kind of a drill

shank. With them the  $\frac{1}{2}$  or  $\frac{5}{8}$  in. round shank, taper square, or Morse taper shank, Nos. 1, 2 and 3, are firmly held. Each tool is provided with sleeves for  $\frac{1}{2}$  and  $\frac{5}{8}$  in. round, straight shanks and Morse taper, Nos. 1 and 2; no sleeve is needed to enable the jaws to grasp taper square shanks.

A feature of advantage of this ratchet is its short, compact head, which permits its operation as a ratchet drill in close places. Being entirely closed, the ratchet is protected from dirt and grease. The tool is made in two

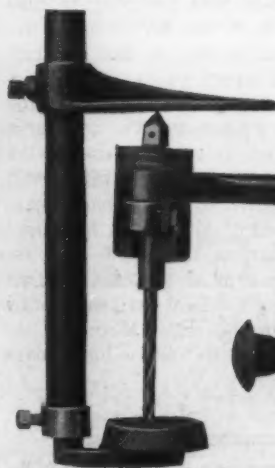


Fig. 1.

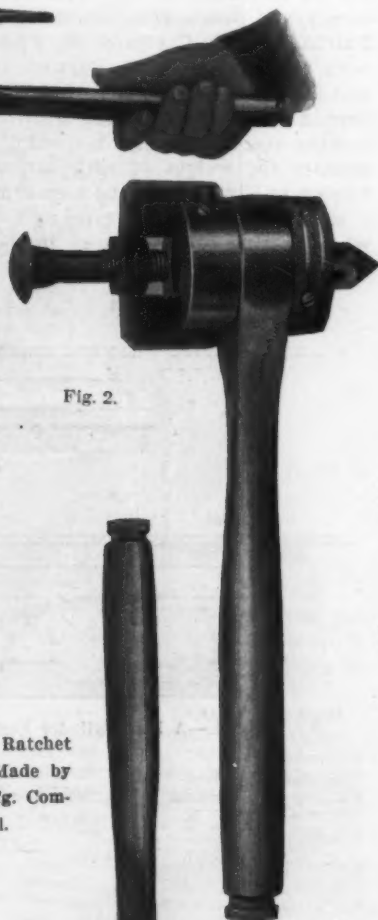


Fig. 2.

The Nelson Combined Ratchet Drill and Wrench Made by the L. H. Brown Mfg. Company, Carlinville, Ill.



Fig. 3.

sizes, No. 1, with 2-in. head and 10-in. handle, and No. 2, with  $2\frac{1}{2}$ -in. head and 12-in. handle. It is packed in a neat portable wooden case.

Statistics just gathered by the *Electrical World* show that the electric lighting industry is represented in the United States by 5264 companies and municipal plants, and in Canada, Mexico and the West Indies by 476. These figures compare with 5015 and 449 on April 1, 1908, showing a gain in the United States of 249 and in the other countries of 27 in the year. Of the total of 5740 plants covered by the statistics 3193 carry electrical supplies. The spread of alternating current methods is commented on, as many as 4154 of the plants having alternating current.

A record in pig iron production is reported for two of the blast furnaces of the Carnegie Steel Company's Mingo Junction, Ohio, group in March. No. 3 furnace made 15,820 tons of Bessemer iron, and No. 4 furnace 15,178 tons, the total of 30,998 tons, being 1500 tons greater than any previous month's record.

### The Rothchild Steam Engine Valve.

A steam engine valve which revolves continuously instead of reciprocating or rocking is an innovation now being introduced by the Rothchild Engine Company, 120 Centre street, New York City. As compared with the familiar slide valves of the D or piston type used on high speed steam engines, or the rocking valve of the Corliss type used on low or medium speed engines, this rotary valve is fundamentally different in that it moves at constant speed and always in the same direction. Incl-

stroke is all that is necessary. This and the fact that the steam acts directly against the piston, suffering little condensation, particularly since the valve chest very thoroughly jackets the cylinder head, are given as the reasons for the increased steam economy which, it is claimed, is effected in any given engine by the application of this type of valve.

Instead of manufacturing engines with this type of valve it is the company's intention to dispose of the rights to its use to engine builders. The valve is claimed to be applicable to all forms of engines—stationary, loco-

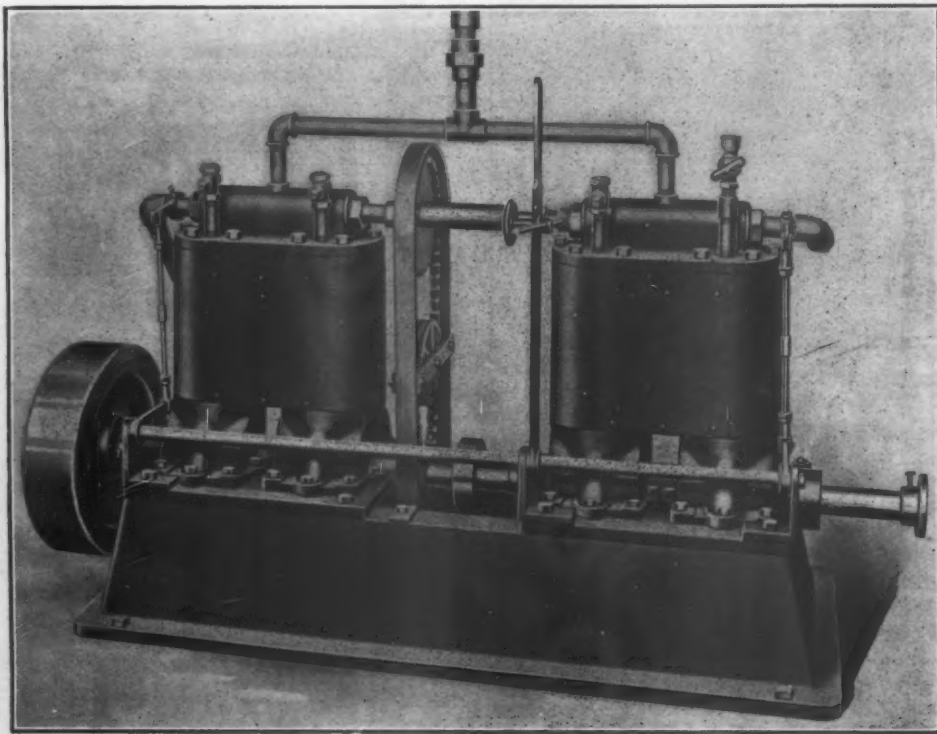


Fig. 1.—A Four-Cylinder Vertical Single Acting Marine Type Engine Equipped with the Rothchild Valves.

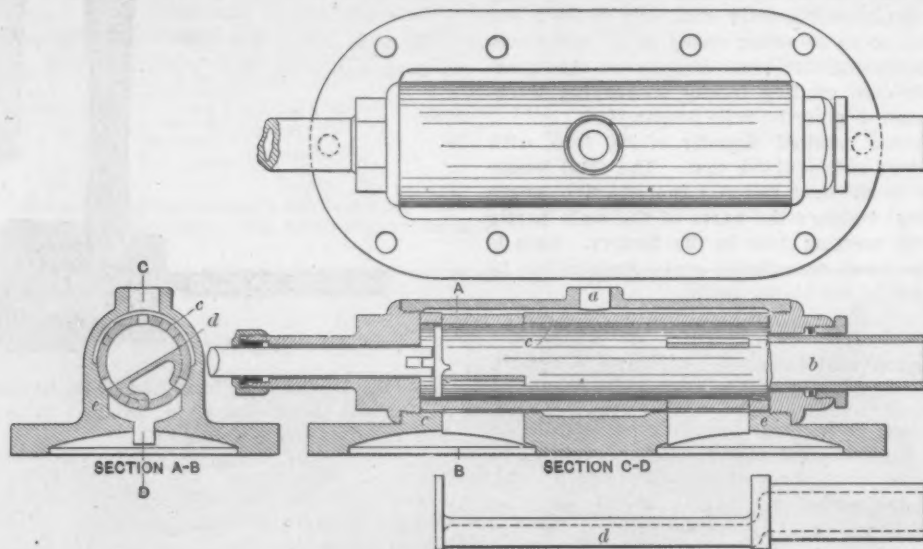


Fig. 2.—Details of the Rothchild Valve.

dentally, since it does not have to be reversed at each stroke, wear is a matter of little consequence, but principally it has the advantage of a simpler operating mechanism, being driven directly from the shaft by a chain and sprocket with a 3 to 1 reduction in speed. Equally simple is the arrangement by which the cut-off can be altered, or the direction of rotation of the engine reversed, as no link motion nor anything of the sort at present necessary in locomotive or marine engines is required. By placing the valve directly on the head of the cylinder steam passages are practically done away with between the valve and the cylinder, and the mechanical clearance between the piston and head at the end of its

motive, marine, &c. Fig. 1 shows a four-cylinder, vertical, single acting marine type engine equipped with the valve; Fig. 2 is a detail of the valve, and Fig. 3 shows the relative positions at a given instant of the valves of the four cylinders of the engine, shown in Fig. 1, having cylinders in opposed pairs, and the cranks of the two sets of cylinders quartering. A typical card from this engine is given in Fig. 4.

The valve is the invention of Joseph Rothchild, mechanical superintendent of the company, and consists essentially of a cylindrical sleeve with its longitudinal axis parallel to the engine shaft, and containing ports around its circumference equally distant apart. Since



the valve revolves at one-third the speed of the engine shaft one of these ports is in position to admit steam for each down stroke of the piston. The valve is surrounded by a casing which is in one piece with the head and has an opening into the cylinder equal in width to the distance between the ports in the valve. Inside of the valve is a piece called the cut-off, which is approximately C shaped in cross section with its concave side toward the cylinder, and separates the live steam from the exhaust space. Referring to Fig. 2, the steam inlet is at *a*, the exhaust outlet at *b*; *c* is the valve, *d* the cut-off and *e* the casing. The cut-off has a rocking adjust-

self-starting, as is the one shown in Fig. 1. In the demonstration of this engine it showed a remarkable sensitiveness in its response to the movement of the control lever, which was repeatedly thrown from full speed in one direction to full speed in the other substantially instantly and the engine as instantly reversed. Where an engine is to be operated at constant speed under variable loads this lever can be controlled through a governor.

While from the illustration it would seem that the application of the valve is limited to single acting engines the company claims to have plans perfected whereby it may be applied to double acting engines with equal facil-

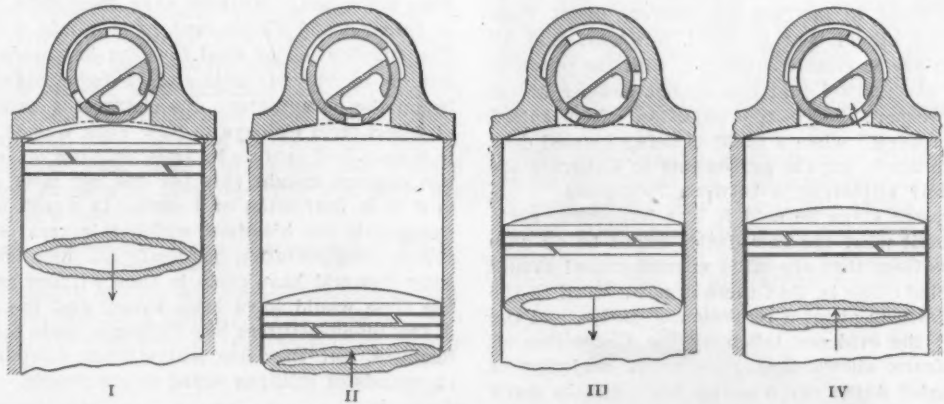


Fig. 3.—Diagrams of the Relative Positions of the Valves of the Four-Cylinder Engine.

ment so that it can be rotated about 60 degrees in either direction, and by its position it determines the speed and direction of the engine.

Fig. 3, while it shows the simultaneous position of the valve ports in the four cylinders of the engine, might equally well be taken to show the four stages in a cycle of one valve, representing a rotation of a third of a revolution, if taken in the order I, III, II, IV. I shows beginning of admission, III expansion following cut off, II beginning of exhaust and IV exhaust just before compression begins. It may be remarked that the compression is independent of the cut-off, occurring always at the same point in the stroke and relatively late, as will be noticed in the card given in Fig. 4.

Steam being admitted through the valve casing from above the valve, passes through one or both of the otherwise idle ports to the interior of the valve, and by the greater area offered to downward pressure the valve is held firmly on its seat in the casing, making it self-compensating for any wear. Similarly the greater pressure on the flat side of the cut-off holds that member also to



Fig. 4.—Typical Indicator Card from an Engine Cylinder with a Rothchild Valve.

close contact with its seat, so that in the whole mechanism there is little or no chance for leakage. As shown in Fig. 1 and also in the detail of the valve in Fig. 2, the valve proper has a hub extension through which the rotary motion is imparted. The opposite end of the valve casing contains an extension of the cut-off member through which exhaust takes place. The quill extension of this piece has attached to it a rocker arm, which is connected by a link to a second rocker arm on the rock shaft with the controlling lever. This one lever gives entire control of the engine. At its central position the engine is stopped instantly and as effectively as though a brake had been applied, while the movement of the lever to either side starts the engine in the corresponding direction and at a speed depending upon the extent of the throw of the lever and the load, as the greater the throw the longer is the period of steam admission.

An engine with more than one cylinder is of course

ity. One of the most important fields for the valve is believed to be in locomotives.

Steel Production in Germany in 1908.

Statistics compiled by the Verein deutscher Eisen und Stahl Industrieller show that the production of steel in Germany and Luxemburg in 1908 was as follows in metric tons:

	Acid. Tons.	Basic. Tons.	Total. Tons.
Ingotts:			
Bessemer .....	374,100	6,510,754	6,884,854
Open hearth.....	146,768	3,854,155	4,000,923
Castings .....	77,443	115,440	192,883
Crucible steel.....			88,183
Electric steel.....			19,536
Totals, 1908.....	598,301	10,480,349	11,186,379
1907 .....	685,161	11,378,471	12,063,632
1906 .....	715,952	10,591,855	11,307,807
1905 .....	655,495	9,411,058	10,066,553
1904 .....	610,697	8,319,594	8,930,291
1903 .....	613,399	8,188,116	8,801,515
1902 .....	517,996	7,262,686	7,780,682
1901 .....	465,040	5,929,182	6,394,222
1900 .....	422,452	6,223,417	6,645,869

The production of crucible and electric steel is reported for the first time for 1908. The totals for the other years represent Bessemer and open hearth ingots and steel castings.

**The Electric Production of Pig Iron.**—Announcement is made by the *Electrochemical and Metallurgical Industry*, on the authority of Dr. Eugene Haanel, who recently visited Sweden to investigate the electric reduction furnace for the Canadian Government, that the Aktiebolaget Elektrometall, of Ludvika, Sweden, will erect in Norway the first electric smelting plant in the world for the production of pig iron on a commercial scale. The first installation will be built this summer, and includes two iron ore reduction furnaces of 2500 hp. each and two steel furnaces of 600 hp. each. All furnaces will be operated with two-phase current. The plant will be enlarged later by erecting four more iron ore reduction furnaces of 2500 hp. each and four steel furnaces of larger size than 600 hp.

The Tata Iron & Steel Company, Ltd., which has had a large force of men at work in the past two years on the construction of iron and steel works in Central India, is building at Kalimati a town for the residences of the staff and coolie labor.

## The Benefits of Protective Duties.

### The Necessity of Continued Protection to American Manufactures.

Col. Albert Clarke, secretary of the Home Market Club, Boston, Mass., and chairman of the late United States Industrial Commission, delivered an interesting address on the tariff question before the Philadelphia Foundrymen's Association on the evening of April 7. His talk was on the tariff as a whole, and his references to iron and steel were only illustrations, as he said he would not attempt to instruct his hearers about their business. They should bear in mind, however, that all our industries are so closely connected with the purchasing power of the market that one cannot prosper unless the others prosper; hence the objection often raised against "log rolling" when a tariff is being framed does not amount to much, for the agreements in Congress are more accurately adjustments between industries.

At the present stage he said it was impossible accurately to foretell what the new duties might be on anything, but two facts that are often misunderstood should be borne in mind: One is, that there is not a word in the Republican platform about a reduction of duties, and the other is, that the evidence taken by the Committee on Ways and Means shows that in a great majority of cases the Dingley duties are none too high, and in many cases not high enough to protect against an increasing foreign competition.

He made several points that are new, or at least not common, in tariff discussion, and one was that we do not need to concern ourselves about the particulars of foreign costs. It is enough for us to know that the goods come and that they often displace American labor. In 10 years under the present tariff dutiable imports increased more than 104 per cent., although the population increased only 20 per cent. This proves that our foreign competitors had nothing to complain of and it indicates that some of our industries were suffering under duties that did not protect.

Another point was that our duties need to be higher than those of other countries on account of the greater value of the market. Anybody would naturally pay more for the privilege of selling here than in a smaller and poorer country.

#### Freight Rates Favor Importations.

Within the last decade the country has been suffering from freight rates that discriminate in favor of imports, and the only known way for saving domestic industries from this is to have duties high enough so that they will not be wholly nullified by it. Rates from Boston to Chicago on imports are 30 cents per 100 lb., and on domestic freight of the same class they are 50 cents. From New Orleans to Chicago the rate on imports is 22 cents and on home products it is 75 cents. Of course, this is the result of trunk and gulf line competition and of arrangements between those lines and the ocean carriers, using through bills of lading. In addition to this favor to imports, the state owned railroads of Germany and France charge only one-half the rates on goods for export that they charge on goods for home consumption. This is equivalent to those countries paying a bounty to their manufacturers to invade foreign markets, and any country which will not protect itself against such aggression is either ignorant of it or is pusillanimous.

He believed the pending revision will result in a smaller reduction of duties than is now indicated, but the reduction will be general, and for reasons that he had given he was afraid it would prove too drastic. Nevertheless, our people are courageous and enterprising, and there will soon be a great revival of prosperity, which of itself will offset some of the disadvantages of low duties. Should a reverse come, however, from any cause, we shall again suffer as we have suffered since the panic of 1907. It is during hard times more than in good times when we need good protective duties.

Referring to the proposed increase of duties on hosiery and gloves, Colonel Clarke said it is fully justified. It would save from ruin many hosiery manufacturers and

would bring here from abroad the manufacture of women's gloves, as a similar increase has already given us the chance to produce 90 per cent. of the men's gloves now worn here. To illustrate the successful working of such duties, he drew three examples from the iron and steel schedule. Although the facts are not new, he stated them so concisely and showed their beneficial effects so effectively that they are quotable, as follows:

#### Benefits from Establishing the Steel Rail Industry.

Prior to 1867 we were dependent upon foreign mills for steel rails and the price was \$166 a ton. A high duty was applied, and now for several years the price has been \$28 a ton. We now have more than 225,000 miles of railroad and 97 per cent. of it is laid with steel rails. The substitution of steel for iron has made possible the hauling of heavier loads and at higher speed. When we began the manufacture, the charge for hauling a bushel of wheat from Chicago to New York was 44.2 cents; now it is only 8.47 cents. In 1860, running on iron rails, the average freight rate per ton per mile was 3 cents; now it is four-fifths of 1 cent. It would be difficult to exaggerate the blessings which this great saving in the cost of transportation has conferred upon mankind. Possibly it would have come in time without protection, but the time would have been longer and the cost greater. A few manufacturers like Carnegie made fortunes in the business, but they are insignificant compared with the thousands of millions saved to the people.

#### Benefits from Establishing the Tin Plate Industry.

Some 35 years ago attempts were made to manufacture tin plate in this country, but the British manufacturers crushed the new plants by underselling them. In the tariff of 1890 a protective duty was put on, but with a proviso that if it did not cause successful production here within a certain time it should come off. The whole free trade press assailed the duty and even after several mills were producing, the *New York Times* said that "Nobody ever thought of investing a dollar in a tin plate factory anywhere in this country." The *London Times* said: "Hitherto the idea has been that it was impossible to manufacture tin plate in America owing to atmospheric conditions." In the spring of 1892, after the Treasury Department had reported 42 mills in operation, producing more than 3,000,000 lb. in three months, the *New York Times* said "there is not one that dares engage to furnish enough tin for the manufacture of the babies' rattles of a small city."

These quotations show something of the character of the opposition which the new industry encountered. Nevertheless it persisted, and what is the result? The American product is now more than equal to the American requirement, and there is a greater variety of sizes and qualities than there was before, more and better machinery is used in its production, and the price is lower than before.

During the last eight years of our dependence upon foreign supply the cost of tin plate in New York averaged 3.1 cents a pound. During the eight years ended 1907, the average cost was 2.9 cents—showing a saving of two-tenths of a cent a pound. In the census year, 1905, our consumption was 1,170,836,160 lb.; therefore, the saving that year, notwithstanding higher wages and the increased cost of material, amounted to \$2,341,672.

Even this is not all. The rolling and the tinning of the plates employed 14,826 people, mostly men, and the mining of the iron ore and its conversion into steel ingots employed several more thousands. All these working people made a greater market for all kinds of goods and gave employment to more teachers, house builders, professional people, &c., in the aggregate probably as many as 40,000. Even the sallow visaged specter of complaint long since slunk away before the light of this industrial triumph. Our climate is fairly vindicated and babies' rattles are cheaper all over the world.

#### Benefits from Establishing the Wire Nail Industry.

Take another illustration. In 1875 the duty on wire nails was 1 cent a pound. We produced but 1000 kegs and the retail price was 10 cents a pound. In 1883 the duty was raised to 4 cents—not without strenuous opposition—and speedily the product began to increase and



the price to come down. In 1890 the duty was reduced to 2 cents and in 1897 to  $\frac{1}{2}$  cent, but without any material change in the domestic price. The 4-cent duty stimulated a production which now amounts to more than 11,000,000 kegs annually and the retail price has fallen from 10 cents to 2.18 cents a pound. Perhaps even the present small duty is no longer needed, but what harm is it? It was an increase and not a reduction of duty that brought down the price, because it made us independent, and independence is worth maintaining.

In conclusion, Colonel Clarke presented an almost startling comparison between the industrial conditions in recent years of Great Britain under free trade and the United States under protection. Besides the decline in British agriculture, he specified 13 of the leading manufacturing industries of that country which have sustained heavy declines in both their domestic and their export sales—namely, shoes, carpets and rugs, glass, gloves, hosiery, iron and steel, jewelry, musical instruments, pottery, silk, sugar, tin plate and woolen and worsted goods. A few samples of these specifications show the character of the whole:

#### How British Industries Have Retrograded Under Free Trade.

The consumption of coal is a good index of the manufacturing industries of a country. The increase from 1902 to 1905 in the four greatest manufacturing nations was:

	Tons.
United States.....	77,500,000
Germany .....	11,300,000
France .....	4,000,000
United Kingdom.....	2,300,000

The British glass industry is rapidly going to smash under free trade. Formerly its exports were largely in excess of its imports. Now the country imports three times as much glassware as it sells abroad. Since 1894 the importation of plate glass has increased 489 per cent.; of window glass 112 per cent., and of flint glass 536 per cent.

From 1888 to 1906 British exports of cotton hosiery to foreign countries fell off 67 per cent. and of woolen hosiery 27 per cent., while there was an increase in the imports of cotton hosiery of 160 per cent. and of woolen hosiery of 30 per cent.

Great Britain has fallen to third rank as a producer of iron and steel, the United States having taken first rank and Germany second—both protective countries. Since 1892 her exports of finished products of iron and steel have increased only 34 per cent. and her imports of such merchandise have increased 4722 per cent.

In the last 20 years British exports of pottery to foreign countries declined £139,000, while those of France gained £500,000 in 10 years, Germany £2,000,000 in eight years and Austria £580,000 in 10 years. While Britain's pottery exports were declining £139,000, her imports increased £365,000.

Formerly England was a great sugar refining country. In 1884 there were eight refineries in London, now only two; in Liverpool 10, now only five; in Greenock nine, now only two; in Bristol, where the industry had been established 200 years, and where the output in 1884 was 44,000 tons, only one refinery had survived in 1900, with an output of 15,000 tons.

His conclusion was that free imports are blighting the very industries of that country which they were expected to promote, and that a similar blight will afflict this country if we fail to protect our industries by adequate duties.

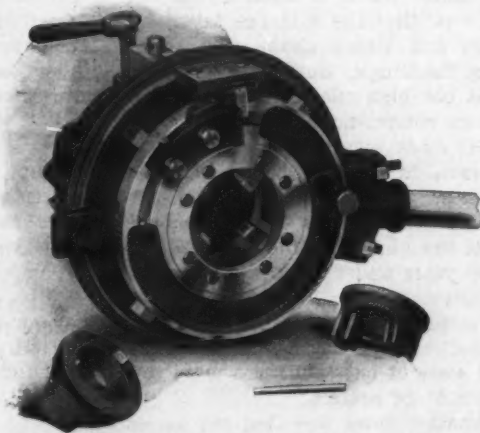
#### The Glasgow Award to the Lorain Steel Company.

—What is referred to by British papers as "a striking instance of foreign competition in the steel trade," is the recent award made to the Lorain Steel Company, Lorain, Ohio, by the Glasgow Town Council. The Committee on Tramways, in recommending the acceptance of the American bid, said that for special track the offer of the Lorain Company was £923, and the lowest British offer was £1136. So far as quality was concerned, there was nothing to choose. In the case of spare points, the offer of the Lorain Company was £1067, and the lowest offer of an English firm, £1134. The difference in rails and fish-

plates was very much greater. The offer of the Lorain Company for fish plates worked out at £6 2s. per ton, delivered in Glasgow harbor. The lowest offer of an English firm was £9 12s. 6d. The offer of a German firm was £12. A leading English firm offered to do the work at £12 10s. per ton.

#### Hart's Buckeye Ratchet Handle Die Stock.

A description of the Buckeye pipe threading die stock made by the Hart Mfg. Company, Cleveland, Ohio, for threading pipe up to 2 in. diameter was given in *The Iron Age* April 2, 1908. This covered the Nos. 23 and 23½ stocks, as operated in the ordinary way by two fixed handles. *The Iron Age*, February 11, 1909, contained a description of the No. 25 die stock, one threading pipe up to 4 in. diameter, and operated through one gear reduction by a ratchet handle. The No. 28 die stock, illustrated herewith, is operated by a ratchet handle, but acting directly on the head, and covering the same range of work as the Nos. 23 and 23½ stocks. Its advantage is that a continuous rotary motion of the handles is not required, as in the direct acting stock, but instead a pumping motion of the ratchet handle accomplishes the



The No. 28 Buckeye Die Stock with Ratchet Handle, Made by the Hart Mfg. Company, Cleveland, Ohio.

same thing, rotating the stock in either direction that may be required, and enabling work to be done in close quarters. With this style of stock all the clear space that is necessary around the pipe is 5 in., measured from its center.

Two latches in the ratchet mechanism minimize the lost motion, and, according to the way these latches are set, the tool may be revolved to cut either right or left hand threads. Like all of the Buckeye die stocks these tools are fitted with the narrow automatically expanding style of dies, and are distinguished especially by an automatic releasing feature for causing the dies to open and stop cutting when a standard thread is finished, and by an automatic feed for leading the dies on the pipe, but not necessitating the reversal or any turning back after the thread is cut, as with a leader screw. The No. 28 stock, mentioned above, has a range of 1 to 2 in. pipe, being regularly equipped with one set of dies to thread 1, 1¼, 1½ and 2 in. right hand, and with extra dies or left hand dies when so ordered. Another style, the No. 28½, is similar, but has a range from ½ to 2 in. pipe. It is regularly equipped with two sets of dies, one threading ½ and ¾ in, and the other 1, 1¼, 1½ and 2 in. right hand. Similarly left hand dies can be provided with this stock.

The Museum of Safety and Sanitation, which has its office at the United Engineering Societies' Building, 20 West Thirty-ninth street, New York, announces the election of the following officers: Acting president, Philip T. Dodge; vice-presidents, Charles Kirchhoff, T. C. Martin, Prof. F. R. Hutton and R. W. Gilder; treasurer, Robert A. Franks; Plan and Scope Committee, Prof. F. R. Hutton, William J. Moran, Dr. Thomas Darlington, H. D. Whitfield and P. T. Dodge; director, Wm. H. Tolman.



# THE SENATE SUBSTITUTE TARIFF BILL.

Official Text of the Metal Schedule of the Senate Finance Committee Bill, Reported to the Senate April 12.

The matter omitted from the Payne bill as passed by the House of Representatives is inclosed in parentheses. The Finance Committee's amendments to that bill are printed in *italics*.

## Schedule C.

### METALS AND MANUFACTURES OF.

115½. Iron ore, including manganiferous iron ore, and the dross or residuum from burnt pyrites, twenty-five cents per ton; provided that in levying and collecting the duty on iron ore no reduction shall be made from the weight of the ore on account of moisture which may be chemically or physically combined therewith; basic slag, ground or unground, one dollar per ton.

116. (Iron in pigs, iron kentledge, and spiegeleisen, two dollars and fifty cents per ton; wrought and cast scrap iron, and scrap steel, fifty cents per ton.) *Iron in pigs, iron kentledge, spiegeleisen, ferro-manganese, wrought and cast scrap iron, and scrap steel, two dollars and fifty cents per ton;* but nothing shall be deemed scrap iron or scrap steel except waste or refuse iron or steel in such physical form as to be fit only to be remanufactured.

117. Bar iron, muck bars, square iron, rolled or hammered, comprising flats not less than one inch wide nor less than three-eighths of one inch thick, round iron not less than seven-sixteenth of one inch in diameter (four-tenths), three-tenths of one cent per pound.

118. Round iron, in coils or rods, less than seven-sixteenths of one inch in diameter, and bars or shapes of rolled or hammered iron, not specially provided for in (sections one or two of this Act) *this section*, six-tenths of one cent per pound; provided that all iron in slabs, blooms, loops, or other forms less finished than iron in bars, and more advanced than pig iron, except castings, shall be subject to duty of four-tenths of one cent per pound; provided further, that all iron bars, blooms, billets (or sizes or shapes of any kind) *slabs or loops*, in the manufacture of which charcoal is used as fuel, shall be subject to a duty of (ten) *eight* dollars per ton.

119. Beams, girders, joists, angles, channels, car-truck channels, T T, columns and posts or parts or sections of columns and posts, deck and bulb beams, and building forms, together with all other structural shapes of iron or steel (whether plain or punched, or fitted for use), *but not assembled, or manufactured, or advanced beyond hammering, rolling, or casting* (three-tenths), four-tenths of one cent per pound.

120. Boiler or other plate iron or steel, except crucible plate steel and saw plates hereinafter provided for in (sections one or two of this Act) *this section*, not thinner than number ten wire gauge, cut or sheared to shape or otherwise, or unsheared, and skelp iron or steel sheared or rolled in grooves, valued at one cent per pound or less, three-tenths of one cent per pound; valued above one cent and not above two cents per pound, four-tenths of one cent per pound; valued above two cents and not above four cents per pound, seven-tenths of one cent per pound; valued at over four cents per pound, twenty per centum ad valorem; provided that all sheets or plates of iron or steel thinner than number ten wire gauge shall pay duty as iron or steel sheets.

121. Iron or steel anchors or parts thereof, one cent per pound; forgings of iron or steel, or of combined iron and steel, but not machined, tooled, or otherwise advanced in condition by any process or operation subsequent to the forging process, not specially provided for in (sections one or two of this Act) *this section*, thirty per centum ad valorem; (antifriction ball forgings of iron or steel, or if combined iron and steel) *antifriction balls, ball bearings, and roller bearings, of iron or steel or other metal, finished or unfinished*, forty-five per centum ad valorem.

122. Hoop, band, or scroll iron or steel, not otherwise provided for in (sections one or two of this Act) *this section*, valued at three cents per pound or less, eight inches or less in width, and less than three-eighths of one inch thick and not thinner than number ten wire gauge, three-tenths of one cent per pound; thinner than number ten wire gauge and not thinner than number twenty wire gauge, four-tenths of one cent per pound; thinner than number twenty wire gauge, six-tenths of one cent per pound; provided that barrel hoops of iron or steel, and hoop or band iron or hoop or band steel flared, splayed or punched, with or without buckles or fastenings, shall pay one-tenth of one cent per pound more duty than that imposed on the hoop or band iron or steel from which they are made (steel bands or strips, untempered, suitable for making band saws, hack

saws, or butchers' saws, one and one-half cents per pound and twenty per centum ad valorem; if tempered, or tempered and polished, three cents per pound and twenty per centum ad valorem).

123. Hoop or band iron, or hoop or band steel, cut to lengths, or wholly or partly manufactured into hoops or ties, coated or not coated with paint or any other preparation, with or without buckles or fastenings, for bailing cotton or any other commodity, three-tenths of one cent per pound.

124. Railway bars, made of iron or steel, and railway bars made in part of steel, T rails and punched iron or steel flat rails, seven-fortieths of one cent per pound; railway fish-plates or splice-bars, made of iron or steel, two-tenths of one cent per pound.

125. Sheets of iron or steel, common or black, of whatever dimensions, and skelp iron or steel, valued at three cents per pound or less, thinner than number ten and not thinner than number twenty wire gauge, five tenths of one cent per pound; thinner than number twenty wire gauge and not thinner than number twenty-five wire gauge, six-tenths of one cent per pound; thinner than number twenty-five wire gauge and not thinner than number thirty-two wire gauge, eight-tenths of one cent per pound; thinner than number thirty-two wire gauge, nine-tenths of one cent per pound; corrugated or crimped, eight-tenths of one cent per pound; all the foregoing valued at more than three cents per pound, thirty per centum ad valorem; provided that all sheets or plates of common or black iron or steel not thinner than number ten wire gauge shall pay duty as plate iron or plate steel.

126. All iron or steel sheets or plates, and all hoop, band, or scroll iron or steel, excepting what are known commercially as tin plates,terne plates, and taggers tin, and hereinafter provided for, when galvanized or coated with zinc, spelter, or other metals, or any alloy of those metals, shall pay two-tenths of one cent per pound more duty than if the same was not so galvanized or coated; sheets or plates composed of iron, steel, copper, nickel, or other metal, with layers of other metal or metals imposed thereon by forging, hammering, rolling, or welding, (forty-five) *forty* per centum ad valorem.

127. Sheets of iron or steel, polished, planished, or glanced, by whatever name designated, one and (three-fourths) *one-half* cent per pound; provided that plates or sheets of iron or steel, by whatever name designated, other than the polished, planished, or glanced herein provided for, which have been pickled or cleaned by acid, or by any other material or process, or which are cold-rolled, smoothed only, not polished, shall pay two-tenths of one cent per pound more duty than is imposed by *this section* on common or black sheets of iron or steel (of corresponding gauge or value).

128. Sheets or plates of iron or steel, or taggers iron or steel, coated with tin or lead, or with a mixture of which these metals, or either of them, is a component part, by the dipping or any other process, and commercially known as tin plates,terne plates, and taggers tin, one and two-tenths cents per pound.

129. Steel ingots, cogged ingots, blooms, and slabs, by whatever process made; die blocks or blanks; billets and bars and tapped or beveled bars; mill shafting (material); pressed, sheared, or stamped shapes, not advanced in value or condition by any process or operation subsequent to the process of stamping; steel saw plates wholly or partially manufactured; hammer molds or swaged steel; gun-barrel molds not in bars; alloys used as substitutes for steel in the manufacture of tools; all descriptions and shapes of dry sand, loam, or iron-molded steel castings; sheets and plates and steel (in all forms and shapes) not specially provided for in (sections one or two of this Act) *this section*, all of the above valued at (eight-tenths of) *three-fourths* of one cent per pound or less, seven-fortieths of one cent per pound; valued above (eight-tenths) *three-fourths* of one cent and not above one and three-tenths cents per pound, three-tenths of one cent per pound; valued above one and three-tenths cents and not above one and eight-tenths cents per pound, five-tenths of one cent per pound; valued above one and eight-tenths cents and not above two and two-tenths cents per pound, six-tenths of one cent per pound; valued above two and two-tenths cents and not above three cents per pound, eight-tenths of one cent per pound; valued above three cents per pound and not above four cents per pound, one and one-tenth cents per pound; valued above four cents and not above seven cents per pound, one and two-tenths cents per pound; valued above seven cents and not above ten

cents per pound, (two) *one and nine-tenths* cents per pound, valued above ten cents and not above thirteen cents per pound, two and three-tenths cents per pound; valued above thirteen cents and not above sixteen cents per pound, two and seven-tenths cents per pound; valued above sixteen cents and not above (thirty cents per pound, four and six-tenths cents per pound; valued above thirty cents per pound, fifteen per centum ad valorem) *twenty-four cents per pound, four and six-tenths cents per pound; valued above twenty-four cents and not above thirty-two cents per pound, six cents per pound; valued above thirty-two cents and not above forty cents per pound, seven cents per pound; valued above forty cents per pound, twenty per centum ad valorem.*

130. Steel wool or steel shavings (forty per centum ad valorem), *eleven cents per pound, including the weight of wrappers and coverings.*

(131. Diamond steel, steel grit, diamond grit, iron form, iron sand, chilled iron sand, and similar articles by whatever name known, *forty-five per centum ad valorem.*)

(132. The terms iron plates, steel plates, plate iron and plate steel, as used in this Act, shall be restricted to such articles having plane surfaces which may, however, be checkered, corrugated, or ribbed, for use as parts of constructions, but not as tools or implements in manufacturing.)

(WIRE):

133. Wire rods: Rivet, screw, fence, and other iron or steel wire rods, whether round, oval, flat, or square, or in any other shape, and nail rods, in coils or otherwise, valued at four cents or less per pound (four-tenths) *three-tenths* of one cent per pound; valued over four cents per pound (three-fourths), *six-tenths* of one cent per pound; provided that all round iron or steel rods smaller than number six wire gauge shall be classed and dutiable as wire; provided further that all iron or steel wire rods which have been tempered or treated in any manner or partly manufactured shall pay an additional duty of one-half of one cent per pound.

134. Round iron or steel wire, not smaller than number thirteen wire gauge, one cent per pound; smaller than number thirteen and not smaller than number sixteen wire gauge, one and one-fourth cents per pound; smaller than number sixteen wire gauge, one and (one-half), *three-fourths* cents per pound; provided that all the foregoing valued at more than four cents per pound shall pay duty at (the rate of) *not less than forty per centum ad valorem*; (all iron or steel wire), *all wire composed of iron, steel, or other metal, except gold or silver*, covered with cotton, silk, or other material, corset clasps, corset steels, dress steels, and all flat wires, and steel strips, strip steel, or steel in strips (twenty-five one-thousandths of one inch thick, or thinner), *not exceeding ten inches in width*, whether in long or short lengths, in coils or otherwise, and whether drawn through dies or rolls, and all other wire not specially provided for in (sections one or two of this Act) *this section*, shall pay a duty of not less than (forty-five) *forty* per centum ad valorem; on iron or steel wire coated by dipping, galvanizing or similar process with zinc, tin, or other metal, there shall be paid two-tenths of one cent per pound in addition to the rate imposed on the wire of which it is made; provided further that articles manufactured wholly or in chief value of any wire or wires provided for in this paragraph shall pay the maximum rate of duty imposed in this section upon any wire used in the manufacture of such articles and in addition thereto one and one-fourth cents per pound, except that *wire cable*, wire rope or wire strand shall pay the maximum rate of duty imposed in this section upon any wire used in the manufacture thereof and in addition thereto *three-fourths* of one cent per pound; and provided further that no article *made from or composed of wire* shall pay a less rate of duty than forty per centum ad valorem; *telegraph, telephone, and other wires and cables composed of metal and rubber, or of metal, rubber, and other materials, forty-five per centum ad valorem.*

(GENERAL PROVISIONS):

(135. No allowance or reduction of duties for partial loss or damage in consequence of rust or of discoloration shall be made upon any description of iron or steel, or upon any article wholly or partly manufactured of iron or steel, or upon any manufacture of iron or steel.)

(136. All metal produced from iron or its ores, which is cast and malleable, of whatever description or form, without regard to the percentage of carbon contained therein, whether produced by cementation, or converted, cast, or made from iron or its ores, by the crucible, Bessemer, Clapp-Griffith, pneumatic, Thomas-Gilchrist, basic, Siemens-Martin, or open-hearth process, or by the equivalent of either, or by a combination of two or more of the processes, or their equivalents, or by any fusion or other process which produces from iron or its ores a metal either granular or fibrous in structure, which is cast and malleable, excepting what is known as malleable-iron castings, shall be classed and denominated as steel.)

(137. No article not specially provided for in this Act, which is wholly or partly manufactured from tin plate, terne plate, or the sheet, plate, hoop, band, or scroll iron or steel herein provided for, or of which such tin plate, terne plate,

sheet, plate, hoop, band, or scroll iron or steel shall be the material of chief value, shall pay a lower rate of duty than that imposed on the tin plate, terne plate, or sheet, plate, hoop, band, or scroll iron or steel from which it is made, or of which it shall be the component thereof of chief value.)

(138. On all iron or steel bars or rods of whatever shape or section which are cold rolled, cold drawn, cold hammered, or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid one-eighth of one cent per pound in addition to the rates provided in sections one or two of this Act on bars or rods of whatever section or shape which are hot rolled; and on all strips, plates, or sheets of iron or steel, of whatever shape, other than the polished, planished, or glanced sheet iron or sheet steel hereinbefore provided for, which are cold hammered, blued, brightened, tempered, polished, or treated in any way in addition to cold rolling to size, there shall be paid five-tenths of one cent per pound in addition to the rates provided in sections one or two of this Act upon strips, plates, or sheets of iron or steel of common or black finish of corresponding gauge or value; and on steel circular saw plates there shall be paid one-half of one cent per pound in addition to the rates provided in this section for steel saw plates.)

135. *No article not specially provided for in this section, which is wholly or partly manufactured from tin plate, terne plate, or the sheet, plate, hoop, band, or scroll iron or steel herein provided for, or of which such tin plate, terne plate, sheet, plate, hoop, band, or scroll iron or steel shall be the material of chief value, shall pay a lower rate of duty than that imposed on the tin plate, terne plate, or sheet, plate, hoop, band, or scroll iron or steel from which it is made, or of which it shall be the component thereof of chief value.*

136. *On all iron or steel bars or rods of whatever shape or section which are cold rolled, cold drawn, cold hammered, or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid one-eighth of one cent per pound in addition to the rates provided in this section on bars or rods of whatever section or shape which are hot rolled; and on all strips, plates, or sheets of iron or steel of whatever shape, other than the polished, planished, or glanced sheet-iron or sheet-steel hereinbefore provided for, which are cold hammered, blued, brightened, tempered, or polished by any process to such perfected surface finish or polish better than the grade of cold rolled, smoothed only, hereinbefore provided for, there shall be paid four-tenths of one cent per pound in addition to the rates provided in this section upon plates, strips, or sheets of iron or steel of common or black finish; and on steel circular saw plates there shall be paid one-fourth of one cent per pound in addition to the rates provided in this section for steel saw plates.*

137. *No allowance or reduction of duties for partial loss or damage in consequence of rust or of discoloration shall be made upon any description of iron or steel, or upon any article wholly or partly manufactured of iron or steel, or upon any manufacture of iron or steel.*

138. *All metal produced from iron or its ores, which is cast and malleable, of whatever description or form, without regard to the percentage of carbon contained therein, whether produced by cementation, or converted, cast, or made from iron or its ores by the crucible, Bessemer, Clapp-Griffith, pneumatic, Thomas-Gilchrist, basic, Siemens-Martin, or open-hearth process, or by the equivalent of either, or by a combination of two or more of the processes, or their equivalents, or by any fusion or other process which produces from iron or its ores a metal either granular or fibrous in structure, which is cast and malleable, excepting what is known as malleable-iron castings, shall be classed and denominated as steel.*

(MANUFACTURES OF IRON AND STEEL):

139. Anvils of iron or steel, or of iron and steel combined, by whatever process made, or in whatever stage of manufacture, one and (seven-eighths) *five-eighths* cents per pound.

(140. Automobiles and parts thereof, bicycles and parts thereof, and motorcycles and parts thereof, *forty-five per centum ad valorem.*)

140. *Automobiles, bicycles, and motorcycles, and parts of any of the foregoing, including tires, axles, and ball-bearings, forty-five per centum ad valorem.*

141. Axles, or parts thereof, axle bars, axle blanks, or forgings for axles, whether of iron or steel, without reference to the stage or state of manufacture, *not otherwise provided for in this section*, valued at not more than six cents per pound (one) *three-fourths* of a cent per pound; provided that when iron or steel axles are imported fitted in wheels, or parts of wheels, of iron or steel, they shall be dutiable at the same rate as the wheels in which they are fitted.

142. Blacksmith's hammers and sledges, track tools, wedges, and crowbars, whether of iron or steel, one and (one-half) *three-eighths* cents per pound.

143. Bolts, with or without threads or nuts, or bolt blanks, and finished hinges or hinge blanks, whether of iron or steel, one and (one-fourth) *one-eighth* cents per pound.

(144. Card clothing not actually and permanently fitted to and attached to carding machines or to parts thereof at the time of importation, manufactured from tempered steel



wire, forty-five cents per square foot; all other, twenty cents per square foot.)

144. Card clothing not actually and permanently fitted to and attached to carding machines or to parts thereof at the time of importation, when manufactured with round iron or steel wire, forty-five cents per square foot; when manufactured with plated wire or other than round iron or steel wire or with felt face, wood face, or rubber face cloth containing wool, fifty-five cents per square foot.

145. Cast-iron pipe of every description, one-fourth of one per cent per pound.

146. Cast-iron andirons, plates, stove plates, sadirons, tailor's irons, hatter's irons, and castings and vessels wholly of cast iron (eight-tenths of one cent per pound) valued at not more than two cents per pound, one-half of one cent per pound; valued at more than two cents per pound, thirty-five per centum ad valorem. All castings of iron or cast-iron plates which have been chiseled, drilled, machined, or otherwise advanced in condition by processes or operations subsequent to the casting process, but not made up into articles, shall pay two-tenths of one cent per pound more than the rate imposed upon the castings of iron and cast-iron plates hereinbefore provided for.

147. Castings of malleable iron not specially provided for in (sections one or two of this Act) *this section* (ninetenths), seven-tenths of one cent per pound.

148. Cast, hollow ware, coated, glazed, or tinned, one and one-half cents per pound.

149. Chain or chains of all kinds, made of iron or steel, not less than three-fourths of one inch in diameter, seven-eighths of one cent per pound; less than three-fourths of one inch and not less than three-eighths of one inch in diameter, one and one-eighth cents per pound; less than three-eighths of one inch in diameter and not less than five-sixteenths of one inch in diameter, one and six-eighths cents per pound; less than five-sixteenths of one inch in diameter, three cents per pound; but no chain or chains of any description shall pay a lower rate of duty than forty-five per centum ad valorem.

150. Lap-welded, butt-welded, seamed, or jointed iron or steel (boiler) tubes, pipes, flues, or stays, not thinner than number sixteen wire gauge, if not less than three-eighths of an inch in diameter, one cent per pound; if less than three-eighths of an inch and not less than one-fourth of an inch in diameter, one and (one-half) *three-fourths* cents per pound; if less than one-fourth of an inch in diameter, two cents per pound; cylindrical or tubular tanks of vessels, for holding gas (or) liquids, or other material *whether full or empty*, thirty per centum ad valorem; flexible metal tubing or hose, not specially provided for in (sections one or two of this Act) *this section*, whether covered with wire or other material, or otherwise, including any appliances or attachments affixed thereto, thirty per centum ad valorem; welded cylindrical furnaces, tubes or flues made from plate metal and corrugated, ribbed or otherwise reinforced against collapsing pressure, two cents per pound; all other iron or steel tubes, finished, not specially provided for in (sections one or two of this Act) *this section*, thirty per centum ad valorem.

#### (CUTLERY):

151. Penknives, pocketknives, clasp knives, pruning knives, budding knives, erasers, manicure knives (knives or razors for cutting corns), and all knives by whatever name known, including such as are denominatively mentioned in this (Act) *section* (which have folding or other than fixed blades or attachments), valued at not more than forty cents per dozen, forty per centum ad valorem; valued at more than forty cents per dozen and not exceeding fifty cents per dozen, one cent per piece and forty per centum ad valorem; (all such cutlery or parts thereof, wholly or partly manufactured), valued at more than fifty cents per dozen and not exceeding one dollar and twenty-five cents per dozen, five cents per piece and forty per centum ad valorem; valued at more than one dollar and twenty-five cents per dozen and not exceeding three dollars per dozen, ten cents per piece and forty per centum ad valorem; valued at more than three dollars per dozen, twenty cents per piece and forty per centum ad valorem; provided (that any of the foregoing knives or erasers if imported in a condition assembled, but not fully finished, shall be dutiable at not less than the rate of duty herein imposed upon fully finished knives and erasers of the same material and quality; and provided further that blades, handles, or other parts of either or any of the foregoing articles imported in any other manner than assembled in finished knives or erasers, shall be subject to no less rate of duty than herein provided for the knives and erasers mentioned herein valued at more than fifty and not more than one dollar and twenty-five cents per dozen. Razors and razor blades, finished or unfinished, valued at less than one dollar and fifty cents per dozen, fifty cents per dozen and thirty per centum ad valorem; valued at one dollar and fifty cents per dozen and less than three dollars per dozen, one dollar per dozen and thirty per centum ad valorem; valued at three dollars per dozen or more, one dollar and seventy-five cents per dozen and thirty per centum ad valorem) *that any of the foregoing knives or erasures, if imported in the condition of assembled, but not fully finished, shall be dutiable at not less than the rate of duty herein imposed upon*

*fully finished knives and erasers valued at more than three dollars per dozen; provided that blades, handles, or other parts of any of the foregoing knives or erasers shall be dutiable at not less than the rate herein imposed upon knives and erasers valued at more than fifty cents per dozen and not exceeding one dollar and twenty-five cents per dozen; razors, finished, valued at less than one dollar per dozen, forty-five per centum ad valorem; valued at one dollar and less than one dollar and fifty cents per dozen, six cents each and forty per centum ad valorem; valued at one dollar and fifty cents and less than two dollars per dozen, ten cents each and forty per centum ad valorem; valued at two dollars or more per dozen, twelve cents each and fifty per centum ad valorem; provided that blades, handles, and unfinished razors shall pay no less duty than that imposed on finished razors valued at two dollars per dozen; provided further that all the articles specified in this paragraph shall have the name of the maker and beneath the same the name of the country of origin die sunk conspicuously and indelibly on the shank or tang of each and every blade. Scissors and shears, and blades for the same, finished or unfinished, valued at not more than fifty cents per dozen, fifteen cents per dozen and fifteen per centum ad valorem; valued at more than fifty cents and not more than one dollar and seventy-five cents per dozen, fifty cents per dozen and fifteen per centum ad valorem; valued at more than one dollar and seventy-five cents per dozen, seventy-five cents per dozen and twenty-five per centum ad valorem.*

(152. Sword blades, and swords and side arms irrespective of quality or use, in part of metal, fifty per centum ad valorem.

152. Swords, sword blades and bayonets, thirty-five per centum ad valorem.

153. Table, butchers', carving, cooks', hunting, kitchen, bread, butter, vegetable, fruit, cheese, carpenters' bench, curriers', drawing, farriers', fleshing, hay, tanners', plumbers', painters', palette, artists', and shoe knives, forks and steels, finished or unfinished; if imported with handles of mother-of-pearl, shell, ivory, silver, nickled silver, or other metal than iron or steel, fourteen cents each; with handles of deerhorn, ten cents each; with handles of hard rubber, solid bone, celluloid, or any pyroxyline material, four cents each; with handles of any other material than those above mentioned, one cent each, and in addition, on all the above articles, fifteen per centum ad valorem; any of the knives, forks or steels, enumerated in this paragraph, if imported without handles, forty per centum ad valorem; provided (that no cutlery other than that provided for in sections one or two of this Act at ad valorem rates of duty shall pay a less rate of duty than forty per centum ad valorem) *that none of the above-named articles shall pay a less rate of duty than forty-five per centum ad valorem.*

154. Files, file-blanks, rasps, and floats, of all cuts and kinds, forty per centum ad valorem.

#### (FIREARMS):

155. Muskets, muzzle-loading shotguns, rifles, and parts thereof, twenty-five per centum ad valorem.

156. Double-barreled, sporting, breech-loading shotguns, combination shotguns and rifles, valued at not more than five dollars, one dollar and fifty cents each and in addition thereto fifteen per centum ad valorem; valued at more than five dollars and not more than ten dollars, four dollars each and in addition thereto fifteen per centum ad valorem each; valued at more than ten dollars, six dollars each; double barrels for sporting breech-loading shotguns and rifles, further advanced in manufacture than rough bored only, three dollars each; stocks for double-barreled sporting breech-loading shotguns and rifles wholly or partially manufactured, three dollars each; and in addition thereto on all such guns and rifles, valued at more than ten dollars each, and on such stocks and barrels, thirty-five per centum ad valorem; on all other parts of such guns or rifles, and fittings for such stocks or barrels, finished or unfinished, fifty per centum ad valorem; provided that all double-barreled sporting breech-loading shotguns and rifles imported without a lock or locks or other fittings shall be subject to a duty of six dollars each and thirty-five per centum ad valorem; single-barreled breech-loading shotguns, or parts thereof, except as otherwise specially provided for in (sections one or two of this Act) *this section*, one dollar each and thirty-five per centum ad valorem; pistols, automatic, magazine, or revolving, or parts thereof, seventy-five cents each and twenty-five per centum ad valorem.

(157. Sheets, plates, wares or articles of iron, steel or other metal, enameled or glazed with vitreous glasses, forty per centum ad valorem.)

#### (NAILS, SPIKES, TACKS AND NEEDLES):

158. Cut nails and cut spikes of iron or steel (fivetenths), four-tenths of one cent per pound.

159. Horseshoe nails, hob nails and all other wrought iron or steel nails not specially provided for in (sections one or two of this Act) *this section*, one and one-half cents per pound; horseshoe calks, and parts thereof, finished or unfinished, of iron or steel, seven dollars and fifty cents per thousand.



160. Wire nails made of wrought iron or steel, not less than one inch in length and not lighter than number sixteen wire gauge, one-fourth of one cent per pound; less than one inch in length and lighter than number sixteen wire gauge, one-half of one cent per pound.

161. Spikes, nuts and washers, and horse, mule or ox shoes, of wrought iron or steel (one half), three-fourths of one cent per pound.

162. Cut tacks, brads or sprigs, not exceeding sixteen ounces to the thousand, five-eighths of one cent per thousand; exceeding sixteen ounces to the thousand, three-fourths of one cent per pound.

163. Needles for knitting (or) sewing or embroidery machines, including latch needles, one dollar and twenty-five cents per thousand and twenty-five per centum ad valorem; crochet needles and tape needles, knitting and all other needles, not specially provided for in this section, and bodkins of metal, twenty-five per centum ad valorem; but no articles other than the needles which are specifically named in this (Act) section shall be dutiable as needles unless having an eye, and fitted and used for carrying a thread. Needle cases or needle books furnished with assortments of needles or combinations of needles and other articles, shall pay duty as entreties according to the component material of chief value therein.

163½. *Fish hooks, fishing rods and reels, artificial flies, artificial baits, snelled hooks and all other fishing tackle or parts thereof, not specially provided for in this section, except fishing lines, fishing nets and seines, forty-five per centum ad valorem.*

164. Steel plates engraved, stereotype plates, electrotypes plates and plates of other materials, engraved or lithographed, for printing (twenty) twenty-five per centum ad valorem; plates of iron or steel engraved or fashioned for use in the production of designs, patterns or impressions on glass in the process of manufacturing plate or other glass, twenty-five per centum ad valorem.

165. Rivets (or) studs, and steel points, lathed, machined or brightened, and rivets or studs for non-skidding automobile tires, forty-five per centum ad valorem; rivets of iron or steel, not specially provided for in this section, one and one-fourth cents per pound.

(SAWS:)

166. Crosscut saws, five cents per linear foot; mill saws, eight cents per linear foot; pit and drag saws, six cents per linear foot; circular saws, twenty per centum ad valorem; steel band saws, finished or further advanced than tempered and polished, five cents per pound and twenty per centum ad valorem; hand, back and all other saws, not specially provided for in this section, twenty-five per centum ad valorem.

167. Screws, commonly called wood screws, made of iron or steel, more than two inches in length (two) three and one-half cents per pound; over one inch and not more than two inches in length (four) five cents per pound; over one-half inch and not more than one inch in length (six) eight cents per pound; one-half inch and less in length (eight) twelve cents per pound.

168. Umbrella and parasol ribs and stretchers, composed in chief value of iron, steel or other metal, in frames or otherwise (thirty-five per centum ad valorem); and tubes of umbrellas, wholly or partially finished (thirty-five), fifty per centum ad valorem.

169. Wheels for railway purposes, or parts thereof, made of iron or steel, and steel tired wheels for railway purposes, whether wholly or partly finished, and iron or steel locomotive, car, or other railway tires or parts thereof, wholly or partly manufactured, one and one-fourth cents per pound; ingots, cogged ingots, blooms, or blanks for the same, without regard to the degree of manufacture, one cent per pound; provided, that when wheels for railway purposes or parts thereof, of iron or steel, are imported with iron or steel axles fitted in them, the wheels and axles together shall be dutiable at the same rate as is provided for the wheels when imported separately.

(MISCELLANEOUS METALS AND MANUFACTURES OF:)

170. Aluminum, aluminum scrap and alloys of any kind in which aluminum is the component material of chief value, in crude form, seven cents per pound; in plates, sheets, bars and rods, eleven cents per pound; barium, calcium, magnesium, sodium and potassium, and alloys of which said metals are the component material of chief value, three cents per pound and twenty-five per centum ad valorem.

171. Antimony, as regulus or metal (three-fourths of one cent per pound), one and one-half cents per pound; antimony ore, stibnite and matte containing antimony, one cent per pound on the antimony contents therein contained; provided that on all importations of antimony-bearing ores and matte containing antimony, the duties shall be estimated at the port of entry, and a bond given in double the amount of such estimated duties for the transportation of the ores by common carriers bonded for the transportation of appraised or unappraised merchandise to properly equipped sampling or smelting establishments, whether designated as bonded warehouses or otherwise. On the arrival of the ores at such establishment, they shall be sampled according to commercial

methods under the supervision of Government officers, who shall be stationed at such establishment, and who shall submit the samples thus obtained to a Government assayer, designated by the Secretary of the Treasury, who shall make a proper assay of the sample, and report the result to the proper customs officers, and the import entry shall be liquidated thereon, except in case of ores that shall be removed to a bonded warehouse to be refined for exportation as provided by law, and the Secretary of the Treasury is authorized to make all necessary regulations to enforce the provisions of this paragraph.

172. Argentine albata, or German silver, unmanufactured, twenty-five per centum ad valorem.

173. Bronze powder, brocades, flitters and metallics, valued at not over twenty cents per pound, six cents per pound; valued at over twenty cents per pound, twelve cents per pound; bronze or Dutch metal or aluminum, in leaf, six cents per one hundred leaves.

174. Copper, in rolled plates, called braziers' copper, sheets, rods, pipes and copper bottoms, two and one-half cents per pound; sheathing or yellow metal, of which copper is the component material of chief value, and not composed wholly or in part of iron ungalvanized, two cents per pound.

(GOLD AND SILVER:)

175. Gold leaf, thirty-five cents per one hundred leaves. The foregoing rate applies to leaf not exceeding in size the equivalent of three and three-eighths by three and three-eighths inches; additional duties in the same proportion shall be assessed on leaf exceeding in size said equivalent.

176. Silver leaf, ten cents per one hundred leaves.

177. Tinsel wire, lame or lahn, made wholly or in chief value of gold, silver or other metal, ten cents per pound; bullions and metal threads, made wholly or in chief value of tinsel wire, lame or lahn, ten cents per pound and thirty per centum ad valorem; fabrics, laces, embroideries, braids, galloons, trimmings, ribbons, beltings, ornaments, or other articles, made wholly or in chief value of tinsel wire, lame or lahn, bullions, or metal threads, ten cents per pound and sixty per centum ad valorem.

178. Hooks and eyes, metallic, whether loose, carded, or otherwise, including weight of cards, cartons, and immediate wrappings and labels, four cents per pound and fifteen per centum ad valorem.

179. (Lead dross, including all dross containing lead, lead bullion or base bullion, lead in pigs or bars, old refuse lead run into blocks or bars, and old scrap lead fit only to be remanufactured, lead in any form not specially provided for in sections one or two of this Act, and the lead contents contained in lead-bearing ores of all kinds; all the foregoing, one and one-half cents per pound) lead-bearing ore of all kinds, one and one-half cents per pound on the lead contained therein; provided, that on all importations of lead-bearing ores the duties shall be estimated at the port of entry, and a bond given in double the amount of such estimated duties for the transportation of the ores by common carriers bonded for the transportation of appraised or unappraised merchandise to properly equipped sampling or smelting establishments, whether designated as bonded warehouses or otherwise. On the arrival of the ores at such establishments they shall be sampled according to commercial methods under the supervision of Government officers, who shall be stationed at such establishments, and who shall submit the samples thus obtained to a Government assayer, designated by the Secretary of the Treasury, who shall make a proper assay of the sample and report the result to the proper customs officers, and the import entries shall be liquidated thereon, except in case of ores that shall be removed to a bonded warehouse to be refined for exportation as provided by law. And the Secretary of the Treasury is authorized to make all necessary regulations to enforce the provisions of this paragraph.

(180. Lead in sheets, pipe, shot, glaziers' lead, and lead wire, one and seven-eighths cents per pound.)

180. Lead dross, lead bullion or base bullion, lead in pigs and bars, lead in any form not specially provided for in this section, old refuse lead run into blocks and bars, and old scrap lead fit only to be remanufactured; all the foregoing, two and one-eighth cents per pound; lead in sheets, pipe, shot, glaziers' lead and lead wire, two and one-half cents per pound.

181. Metallic mineral substances in a crude state, and metals unwrought, whether capable of being wrought or not, not specially provided for in (sections one or two of this Act), this section twenty per centum ad valorem; monazite sand and thorite, four cents per pound.

(182. Chrome or chromium metal, ferrochrome or ferromolybdenum, ferromolybdenum, ferrophosphorus, ferrotitanium, ferrotungsten, ferrosilicon, containing more than fifteen per centum of silica, ferrovanadium, manganese metal, molybdenum, titanium, tantalum, tungsten or wolfram metal, fifteen per centum ad valorem; ferrosilicon containing not more than fifteen per centum of silica and ferromanganese, four dollars per ton.)

182. Chrome or chromium metal, ferrochrome or ferromolybdenum, ferromolybdenum, ferrophosphorus, ferrotitanium, ferrotungsten, ferrosilicon, containing more than fifteen per

centum of silicon, ferrovanadium, molybdenum, titanium, tantalum, tungsten, or wolfram metal, valued at two hundred dollars per ton or less, twenty-five per centum ad valorem; valued at more than two hundred dollars per ton, twenty per centum ad valorem; ferrosilicon containing not more than fifteen per centum of silicon, four dollars per ton.

183. Nickel, nickel oxide, alloy of any kind in which nickel is a component material of chief value, in pigs, ingots, bars, rods, plates, sheets and strips cut from sheets, but not rolled or drawn, six cents per pound.

184. Pens, metallic, except gold pens, twelve cents per gross; with nib and barrel in one piece, fifteen cents per gross.

(185. Penholder tips, penholders or parts thereof, and gold pens, twenty-five per centum ad valorem; fountain pens, stylographic pens and ink pencils, or parts of any of them, thirty per centum ad valorem; provided, that pens and penholders shall continue to be classified separately for duty purposes, but so-called combination penholders, comprising, besides a penholder, a pencil, rubber eraser, automatic stamp, or similar attachments, shall be assessed for duty as entireties according to the component material of chief value therein.)

185. Penholder tips, penholders and parts thereof, twenty-five cents per gross and twenty-five per centum ad valorem; gold pens, twenty-five per centum ad valorem; fountain pens, stylographic pens, thirty per centum ad valorem; combination penholders, comprising penholder, pencil, rubber eraser, automatic stamp, or other attachment, forty-five per centum ad valorem; provided, that pens and penholders shall be assessed for duty separately.

186. Pins with solid heads, without ornamentation, including hair, safety, hat, bonnet and shawl pins; any of the foregoing, composed wholly of brass, copper, iron, steel or other base metal, not plated, and not commonly known as jewelry, thirty-five per centum ad valorem; and agraffes, barrettes, bars, belts, buckles, cabochons, chatelaines, clasps, combs, coulants, girdles, slides, dress hat and millinery ornaments composed wholly of brass, copper, iron, steel, or other base metal, not plated nor polished nor commonly known as jewelry, forty per centum ad valorem; if plated, and not jewelry, forty per centum ad valorem; if any of the foregoing have fancy metal or enameled metal heads or plain heads of glass, paste, wax, or any other material than precious or semiprecious stones, forty-five per centum ad valorem; if the heads be in imitation of baroque pearls or be ornamented, decorated, cut or ground, forty-five per centum ad valorem; if imitation precious stones or imitation pearls or corals are set in the heads of the pins or the articles are otherwise mounted or set with imitation precious stones or imitation pearls or corals, fifty per centum ad valorem; any of the foregoing articles, if made wholly or in part of precious metal or if set with precious or semi-precious stones or pearls or corals, shall be classified as jewelry.

187. Quicksilver, seven cents per pound. The flasks, bottles, or other vessels in which quicksilver is imported shall be subject to the same rate of duty as they would be subjected to if imported empty.

188. Type metal, one and one-half cents per pound on the lead contained therein; new types, twenty-five per centum ad valorem.

(189. Watch movements, whether imported in cases or not, if having not more than seven jewels, seventy cents each; if having more than seven jewels and not more than eleven jewels, one dollar and thirty-five cents each; if having more than eleven jewels and not more than fifteen jewels, one dollar and eighty-five cents each; if having more than fifteen jewels and not more than seventeen jewels, one dollar and twenty-five cents each and twenty-five per centum ad valorem; if having more than seventeen jewels, three dollars each and twenty-five per centum ad valorem; watch cases and parts of watches, including watch dials, chronometers, box or ship, and parts thereof, clocks and parts thereof, not otherwise provided for in this section, whether separately packed or otherwise, not composed wholly or in part of china, porcelain, parian, bisque or earthenware, forty per centum ad valorem; all jewels for use in the manufacture of watches or clocks, ten per centum ad valorem; provided that all watch movements and cases of foreign manufacture shall have the name of the manufacturer and of the city, town, or village, and country of manufacture cut, engraved or die sunk conspicuously and indelibly on the plate of the movement and the inside of the case, respectively, and the movements shall also have marked thereon by one of the methods indicated the number of jewels and adjustments, said number to be expressed both in words and in Arabic numerals; and none of the aforesaid articles shall be delivered to the importer unless marked in exact conformity to this direction.)

189. Watch movements, whether imported in cases or not, if having more than seven jewels, sixty-five cents each; if having more than seven jewels and not more than eleven jewels, one dollar and thirty-five cents each; if having more than eleven jewels and not more than fifteen jewels, one dollar and eighty-five cents each; if having more than fifteen

and not more than seventeen jewels, one dollar and twenty-five cents each and twenty-five per centum ad valorem; if having more than seventeen jewels, three dollars each and twenty-five per centum ad valorem; watch cases and parts of watches, chronometers, box or ship, and parts thereof, forty per centum ad valorem; clock movements having jewels in the escapement, and clocks containing such movements, one dollar each and forty per centum ad valorem; all other clocks and parts thereof, not otherwise provided for in this section, whether separately packed or otherwise, not composed wholly or in part of china, porcelain, parian, bisque, or earthenware, forty per centum ad valorem; all jewels for use in the manufacture of watches or clocks, ten per centum ad valorem; enameled dials for watches or other instruments, sixty per centum ad valorem; provided, that all watch and clock dials shall have indelibly painted or printed thereon the country of origin, and if attached to movements, in addition to the country of origin shall have the name of the maker or makers of such watch or clock movements indelibly painted or printed thereon, and that all watch movements, lever clock movements, with jewels in the escapement, and cases of foreign manufacture shall have the name of the manufacturer and country of manufacture cut, engraved, or die sunk conspicuously and indelibly on the plate of the movement and the inside of the case, respectively, and the movements shall also have marked thereon by one of the methods indicated the number of jewels and adjustments, said number to be expressed both in words and in Arabic numerals; and none of the aforesaid articles shall be delivered to the importer unless marked in exact conformity to this direction.

190. Zinc ore and calamine, one cent per pound on the zinc (content) contained therein; provided, that on all importations of zinc-bearing ores the duties shall be estimated at the port of entry and a bond given in double the amount of such estimated duties for the transportation of the ores by common carriers bonded for the transportation of appraised or unappraised merchandise to properly equipped sampling or smelting establishments, whether designated as bonded warehouses or otherwise. On the arrival of the ores at such establishments they shall be sampled according to commercial methods under the supervision of Government officers, who shall be stationed at such establishments, and who shall submit the samples thus obtained to a Government assayer, designated by the Secretary of the Treasury, who shall make a proper assay of the sample, and report the result to the proper customs officers, and the import entries shall be liquidated thereon, except in case of ores that shall be removed to a bonded warehouse to be refined for exportation as provided by law. And the Secretary of the Treasury is authorized to make all necessary regulations to enforce the provisions of this paragraph.

191. Zinc in blocks or pigs, one cent per pound; in sheets, one and one-fourth cents per pound; in sheets coated or plated with nickel or other metal, or solutions, one and one-half cents per pound; old and worn out, fit only to be remanufactured, one cent per pound.

(192. Alloys and other mixed metals in lumps, pigs, blocks, bars, cakes, sheets, or powder, not specially provided for, twenty per centum ad valorem.)

192. Cans, boxes, packages, containers, trays, signs and similar articles, composed wholly or in chief value of tin plate,terne plate or iron or steel sheets, if lacquered, enameled or printed by any process of lithography whatever, all the foregoing, filled or unfilled, and whether their contents be dutiable or free, four cents per pound and thirty-five per centum ad valorem; provided, that none of the foregoing articles shall pay a less rate of duty than fifty-five per centum ad valorem.

(193. Bottle caps, if not colored or embossed in color, forty-five per centum ad valorem; if lacquered, enameled, lithographed, or embossed in color, fifty-five per centum ad valorem.)

193. Bottle caps, if not colored, waxed, lacquered, enameled, lithographed, or embossed in color, forty-five per centum ad valorem; if colored, waxed, lacquered, enameled, lithographed, or embossed in color, fifty-five per centum ad valorem.

194. Cash registers (electric machinery, jute-manufacturing machinery), linotype and all typesetting machines, machine tools, printing presses, sewing machines, typewriters, and all steam engines, thirty per centum ad valorem; embroidery machines and lace-making machines, including machines for making lace curtains, nets, or nettings, forty-five per centum ad valorem; provided, however, that all (embroidery machines and lace-making) lever or gougerough lace machines, including machines for making lace curtains, nets, or nettings, imported prior to July first, nineteen hundred and eleven, shall be admitted free of duty.

195. Articles or wares not specially provided for in (sections one or two of this Act) this section composed wholly or in part of iron, steel, lead, copper, nickel, pewter, zinc, gold, silver, platinum, aluminum, or other metal, and whether partly or wholly manufactured, forty-five per centum ad valorem.



## Legal Decisions in the Iron and Hardware Trades.

BY A. L. H. STREET.

**Sales.**—Plaintiffs agreed to import and deliver beams to a structural company in Boston for defendant, payment to be made on delivery to the company. Letters between the parties showed that defendant understood that plaintiffs would transport the beams from the delivery point on the Boston wharf to the company's plant at defendant's expense. Held that plaintiffs were only bound to make delivery at Boston; that when the beams were delivered on the wharf and the structural company was notified thereof, plaintiffs' contract was completed; that defendant was liable to them for the expense of transportation from the wharf to the plant. (Massachusetts Supreme Judicial Court) *Houdlette vs. Dewey*, 86 N. W. Rep., 790.

**Sales.**—Plaintiff agreed to furnish defendant the hardware to be used in a public building to be erected by defendant, delivery to be made within a specified time; 85 per cent. of the contract price was payable as the work progressed, and the remaining 15 per cent. within 30 days after completion of the work. It was agreed that a specified sum should be paid for each day's delay in completion of the work by plaintiff as liquidated damages, "the same to be deducted from the final payment on account of this agreement." Two payments were made during the progress of the work and a third was made more than 30 days after the contract was completed, and was accompanied by a letter to plaintiff stating that defendant inclosed a further remittance on account of the contract and asked to have a detailed statement of plaintiff's account. The payments did not amount to 85 per cent. of the price. Held that the payments and the letter accompanying the last one did not, as a matter of law, constitute a waiver of damages for delay. (New York Supreme Court, Appellate Division) *Reading Hardware Company vs. Peirce*, 113 N. Y. Supp. 331.

**Employees.**—When an employee is performing his duties properly his employer is not bound to instruct him regarding apparent dangers attending particular acts. An employee assumes all obvious risks where, though he understands them, he continues in the employment. Where one employed to feed sheets of steel into a die press was injured through a fellow employee tripping the press while the injured employee was trying to release a sheet caught by a defective gauge, after he had told the fellow employee to pull the sheet, the proximate cause of the injury was the fellow employee's negligence or misunderstanding and not the defective gauge. (Michigan Supreme Court) *Richards vs. Michigan Pressed Steel Company*, 119 N. W. Rep. 1077.

**Employees.**—If an employee, when injured while loading machinery by using an electric crane, put a ring apparently capable of supporting twice the load it had to carry on the hook of the crane in the same way in which the foreman had just done, and had always done before, and the ring broke, not through the manner of its use, but through crystallization or overheating, conditions not observable to him, he exercised due care. (Massachusetts Supreme Judicial Court) *Bagge vs. B. F. Sturtevant Company*, 87 E. Rep. 495.

**Employees.**—The Minnesota statute requiring all machinery to be protected as far as practicable requires the guarding of emery wheels. And where it is practicable to guard them it is negligence to operate them without a guard. The statutory duty is not discharged by merely furnishing a suitable guard and exercising reasonable care in selecting an operator. In this case the duties of the operator required him to change wheels from time to time to meet the exigencies of the work, and in making the change it was necessary to take off the guard. The operator removed the guard and made the change, but neglected to replace the guard, and while revolving, the wheel burst and caused the injuries sustained by plaintiff. Held that the operator and plaintiff were not fellow servants as affecting plaintiff's right to recover from his employer. The defences, contributory negligence and assumption of risk, have no application, and the employer was responsible for the failure to maintain the guard. (Minnesota Supreme Court) *Davidson vs. Flour City Ornamental Iron Works*, 119 N. W. Rep. 483.

**Employees.**—An Ohio statute requires shop owners to use ordinary care to make suitable provision to prevent injury to persons coming in contact with machinery, and requires exposed cog and other wheels in certain positions to be guarded by substantial railings. Another statute cuts off the defense of assumed risk when an employee is injured by neglect to protect machinery as so required, except for the reduction of damages. Held that if a shearsman in a steel mill, while performing his duty had his right arm and hand caught between exposed and unprotected cog wheels which were within 2 ft. of where he was required to work, and if his employer was negligent in failing to properly box, cover and shield the wheels, he can recover. (U. S. Circuit Court of Appeals) *Republic Iron & Steel Company vs. Yanuska*, 166 Fed. Rep. 684.

**Employees.**—Contributory negligence of a child less than

14 years old employed in a factory in violation of an Illinois statute is no defense to suit for injury to him, though when injured he was doing work he was not authorized, or was forbidden, to do. That the statute does not expressly prescribe a liability in damages for a violation of its terms is no defense to a suit for injury to one employed in violation thereof. (Illinois Supreme Court) *Strafford vs. Republic Iron & Steel Company*, 87 N. E. Rep. 358.

**Employees.**—An Indiana statute prohibits the employment in manufacturing establishments of children under 16 years old for more than 60 hours a week or more than 10 hours a day. Held that a steel company was negligent if it employed a boy under the specified age for more than the maximum number of hours, resulting in his falling asleep near a furnace track through exhaustion and being injured by an ore car run at an unusual time; that the boy was not guilty of contributory negligence barring recovery for his injury; and that while a violation of the statute must be the proximate cause of the injury to constitute negligence upon which suit will lie, the employment of the boy over-time required the company to foresee such injury as resulted, thus making the injury a proximate result of the employment in violation of the statute. An employer must so instruct a young and inexperienced employee as to reasonably enable him to avoid injury, and especially when he is employed in violation of a statute limiting the hours of employment. One employing a child must ascertain at his peril whether the child is of the age required by a statute prohibiting the employment of children under 14 years old, in any manufacturing plant. If a child under that age is injured through his employment, the employer is liable, notwithstanding the child or its parents misrepresented its age. (Indiana Supreme Court) *Inland Steel Company against Yedinak*, 87 N. E. Rep. 229.

## Stocks of Copper and March Production.

The Copper Producers' Association early this week issued the figures of March production and stocks of new marketable copper in this country on April 1, which compare as follows with the preceding month:

	March. Pounds.	February. Pounds.
Production in this country from all sources during the month.....	117,058,661	103,135,200
Deliveries for consumption and export during the month.....	108,063,007	74,546,614
Stocks on hand at all points in this country at the end of the month....	182,279,902	173,284,248

The accumulation in January was 21,772,779 lb., in February 29,154,203 and in March 8,995,654. Sales to domestic consumers in January were 53,282,000 lb., in February 46,774,000 and in March 66,415,000. Production is now at a daily rate of 4,336,000 lb.

**Charles H. Warren's Retirement.**—Charles H. Warren has retired from the firm of Warren, Salisbury & Nightingale, Providence, R. I., steel and iron merchants, after an active participation in the business for 34 years. A new partnership has been formed by Edgar W. Salisbury and Horatio R. Nightingale under the name of Salisbury & Nightingale, to continue the business. The concern is an old one, having been established in 1820 as Dyer & Brown. Horatio R. Nightingale, father of the present member of the firm of that name and father-in-law of Mr. Warren, bought into the firm in 1848, and in 1875, when Mr. Warren became connected with the business, it was carried on as Nightingale & Kilton. Mr. Nightingale retired in 1881, and the partnership of Kilton, Warren & Co. was begun. Three years later the firm became Warren, Salisbury & Nightingale, since which time Mr. Warren had been the managing partner until his retirement. He was born in New York, March 13, 1844, and was educated at Phillips Exeter Academy and Harvard University. Previous to becoming associated with the Providence house he was for nine years in the Philippines, with the American firm of Russell & Sturgis.

The properties of the Southern Steel Company were sold at Birmingham, Ala., under court order April 12 to W. W. Miller, New York, representing the reorganization committee, for \$5,111,000. They had been in the hands of receivers since October 25, 1907. An attorney for the Schuler and other dissenting interests filed notice that the purchase would be subject to the pending litigation against the company.



# THE IRON AGE

Established in 1855.

New York, Thursday, April 15, 1909.

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				HARDWARE EDITOR.

## International Industrial Comparisons.

Comparative economic and industrial conditions in the United States and Europe have been subjects of investigation time and again. They have been the heart of the tariff discussions of many years. Preliminary to the "scientific" study of the tariff schedules now in process of revision, the Ways and Means Committee of the House secured from the Department of Commerce and Labor the results of inquiries made in Europe by specially dispatched investigators. We are told that the data thus gathered as to the cost of various manufactured articles abroad led to the fixing of certain rates of duty in the bill that has passed the House. From time to time delegations of workmen go from one country to another, to investigate conditions in a particular industry, and to write reports which shall bear on the continuance or the modification of certain practices in domestic shops. Now and then a workman who has had experience in two countries—the United States and England, for example—contributes an article comparing with some detail the efficiency of the American and the British shop workman. Since industrial competition between nations has become of equal moment with competition in the building of armament, the analysis of conditions of manufacture has grown to be more and more a subject of Government inquiry.

The British Board of Trade, for example, has just issued the third and last of a series of "Reports on the Cost of Living." The investigation included English, German and French towns, and is spoken of as "one of the most comprehensive international studies of social conditions ever undertaken." The comparison of conditions in Great Britain and Germany made in previous publications on the same subject was rather favorable to the British workman, though it was admitted that in view of different nationality, traditions and habits, probably neither set of workmen would care to exchange with the other. The results of the French inquiry are now added. In the case of trades which can be compared, as for example compositors, building trades workers and machinists, it is found that the wages of the French workman are to those of the English workman as 75 to 100. Wages for common labor often run as low as \$3.50 to \$4.25 a week in France, considerably lower than in Great Britain. It is found that among French artisans the contributions of other working members of the family, particularly the wife, are greater than in England or Germany among all classes of workers. The average French family is only three-fourths the size of the average

English family; there is also a greater use of prepared foods, since mothers are to a larger extent employed away from home. The Frenchman pays less rent than the English workman, chiefly because he lives in smaller quarters. The expenditure for food by French workmen is greater than that in England. For families with a weekly income of 30 to 35 shillings the weekly expenditure for food is 4 shillings per head, as against 4 shillings 10 pence in France. Summarizing the situation, the report says as to living expenses:

The expenditure of the average British workingman (with an average family) on certain standard articles of food and fuel, and on rent at the prices and rents ruling in France, would be greater than his expenditure on the same items (exclusive of local taxation) at the prices and rents ruling in England as 114 is to 100.

But the French workman's wages are but 75 per cent. of those of the British workman, and the former works 117 hours to every 100 worked by the latter. The payment per hour in France, therefore, is less than two-thirds that in Great Britain.

The conclusion the British workman is expected to draw from the entire inquiry is that his lot is at least not worse than that of the German workman and considerably better than that of the French workman. The economic lesson to be derived from the inquiry is to be viewed in the light of the controversy over protection that has had so large a place in British politics in the past few years. The question of the relative efficiency of labor in the three countries is not entered upon, nor is that of the comparative cost of similar manufactured products. The purpose evidently has been to show that the British workman would not have been better off under a national fiscal policy similar to that of Germany or France. Possibly the conclusion is as much warranted by the facts presented as are some of the deductions we have read as to the rates of duty which should be levied by the United States to cover the difference in labor conditions between this country and its European competitors. It is to markets that all such inquiries should be directed, not to workshops. Quality and price and availability of product are the determining considerations in weighing the factors in international competition, rather than per diem wage, or the cost of living, or even labor cost per ton or pound, or assembling cost of raw materials.

## The Tie Plate and the Steel Tie.

In the present period of reduced prices for steel products there does not seem to be more interest than formerly in the all steel railroad cross tie, although it used to be said that in the event of a general lowering of steel prices the steel tie would be placed in a new aspect. The study which has lately been given to means for preserving wooden ties has raised hopes for a less expensive solution of the problem than would be involved in the introduction of an all steel tie. This preservation involves protection of the tie from decay and from mechanical abrasion from the rail. For the former tie treatment is resorted to and for the latter a tie plate is used.

Tie plates have been in use for about 20 years. The use has increased pretty steadily, until now the normal year's output is reckoned at not far from 250,000 tons, so that while the tie plate does not involve anything like the steel tonnage which would be called for by the general use of an all steel tie, it nevertheless bids fair to become a tonnage proposition, if anything approaching a general adoption is reached. Thus a 68-oz. tie plate, laid on ties placed 2 ft. apart, calls for 10 gross tons per mile

of track, and would therefore involve about 3,250,000 tons of steel for the 325,000 miles of standard steam railroad track now in existence.

The pitfall of the steel tie enthusiast has been the apparent economy through the very long life promised, this leading to disregard of the high interest charge upon the investment. Added life after a period of a relatively few years is of very minor consequence, for the reason that the sinking fund for replacement becomes very small. Thus a sinking fund invested at 6 per cent. interest compounded annually requires a contribution of 7.157 per cent. at the beginning of each year to equal unity at the end of 10 years, but only 2.565 per cent. for a 20-year period, 1.193 per cent. for a 30-year period and 0.610 per cent. for a 40-year period. At between 11 and 12 years the sinking fund contribution equals the interest charge on the principal, while beyond that time it rapidly dwindles into insignificance. The cost of maintaining an investment which must be replaced regularly at intervals of between 11 and 12 years is the same as the interest charge alone on an investment of double the amount, and the latter is as expensive, even though it never needs to be replaced. If the investment must be replaced at intervals shorter than 11 years, the cost of replacement is high and it pays well to prolong the life; but if the life is already 12 or 15 years, it is of relatively minor importance to prolong it further. The railroads are fully alive to these arithmetical facts, but they are evidently often lost sight of by the designers of steel ties.

The adoption of the thick flange rail with its slightly decreased width has given a great impetus to the tie plate industry. With the heavy service involved, the tie plate is regarded as almost indispensable. It contributes to safety and greatly reduces the cost of upkeep of track. It is claimed that any tie plate increases the holding power of the spikes, while most forms add a holding power of their own to the side thrust of the wheel flange.

Outside of these considerations, the tie plate is a tie preserver and goes hand in hand with the use of preservatives to the wood. Data on the results of tie treatment are not full enough as yet to warrant generalizations which would be applicable to average conditions, but a little analysis of the service performed by a tie plate can be made, with the object of emphasizing the fact that, by reason of the arithmetical facts noted above, these methods of prolonging the life of a wooden tie apply to the most important part of the possible saving. There is much more to be gained by making a tie last 10 years instead of five years than in making it last 20 years instead of 10 years. The general claim is made that a tie which would wear out in service in five years will give 10 years' service with tie plates. The cost of maintaining an 85-cent tie, wearing out in five years, at 6 per cent. interest, is 5.10 cents a year interest on investment, and 14.23 cents a year contribution to sinking fund, a total of 19.33 cents a year. That same annual contribution will support an investment of \$1.469 if replacement is to occur only once in 10 years, the interest on \$1.469 being 8.814 cents and the contribution to sinking fund being 10.514 cents. The difference between \$1.47 and 85 cents is 62 cents, which sum could be spent to make an 85-cent tie last 10 years instead of five years. The most expensive tie plates do not approach this cost, a rough approximation of the average cost being from 20 to 25 cents a pair.

Naturally a great many considerations enter into the problem besides these of interest and sinking fund, but they show conclusively how much more practical it is to add a moderate expense in order to prolong the tie life

by a moderate amount than to add a large expense in order to achieve an indefinitely great prolongation. Much has been said of the prospective exhaustion of tie timber. All these pronouncements are based upon computations involving a continuance of the rapid increase in the rate of consumption shown in recent years. If each tie cut were made to last twice as long as formerly the whole aspect would be changed. This, and more, too, is possible, as there are the chances of making serviceable many soft woods, as the loblolly pine, which are not now in the reckoning. In this work the tie plate seems destined to be a very important factor, and while it does not promise very large tonnages such as the all steel tie would involve, it will still be by no means an unimportant factor in steel consumption.

### Government Standards for Machinery.

In the attempt to reorganize the management of the navy yards attention might profitably be paid by the department to the economy and convenience of standardizing certain requirements. If possible, the standards should be made to conform with those established by the industrial companies upon which the Government must depend for its machinery. The War Department would also be a gainer by a change in the system, or rather by correcting the existing lack of system. It has long been a matter of complaint that Government specifications for electrically driven machinery include motors which no manufacturer can furnish from his regular lines. In addition, the various navy yards, arsenals and other Government works have their own individual ideas as to standards, so that the variety of motor which machinery builders and the electric companies are compelled to furnish seemingly has no end. In figuring the ordinary specification the machine tool builder has only to consult the lists of the manufacturers of electrical supplies to get the price that must figure into the cost of the tool. With Government business the specification must be handed over to the electric company for prices before a bid can be made. Consequently the Government must pay more than other buyers, because it pays for a motor built to order.

It is the same with duplicate repair parts. As the manufacturer does not keep them in stock the entire motor must be duplicated, so that the Government may not have to wait in case of an accident or of wearing out. Not only are the parts more costly because they are made special, but some of them are unnecessary. Provision has to be made to replace parts of motors which ordinarily never wear out. Should the rare exception occur with a standard machine it could be replaced at short notice by the factory; but the Government must always see to it that all parts are available in its own stockrooms.

As compared with those of the ordinary buyer, the Government's standards are very high. The great electric companies believe they are unnecessarily so. Manufacturing and laboratory experience has established the standards of the latter, but the Government engineers rarely agree with them. Under certain conditions so extreme an attitude may be deemed justifiable, as where machinery for warships or fortifications is involved. But the electrical experts of the companies which have built up great plants maintain that their standard is sufficiently high; otherwise, it would be higher. They believe there is as small chance of their regular motors or other equipment going wrong as of those built according to Government requirements.

In spite of the fact that Government requirements are high, electrical interests would find it worth while to meet



them in manufacturing for stock if uniformity in standards could be established. The present wide variation between the various Government works precludes interchangeability of equipment, which might at times be both a convenience and an economy. The chief factors, however, are initial cost and delivery. Usually there are long waits after a contract for machinery has been let because of delay in the delivery of motors. The electric companies cannot do better than to hurry the manufacture of the special apparatus. In rush times, when the effort to keep up with orders forces works to maximum production, there can be little just criticism if orders for special equipment are delayed. Government red tape, to which so many troubles are laid, is not responsible, but the failure of the departments to unite on their requirements. This is one reason why many machinery builders avoid Government business. Much annoyance and extra labor attends it, and there is some risk of loss. The error of quoting regular prices for electric appurtenances has on occasion taken off all profit and even something besides.

Electric motors are not the only example of this lack of system in connection with army and navy work. Thousands of dollars expended annually as tribute to individual preferences might be saved by well directed effort for uniform standards.

## CORRESPONDENCE.

### Open Hearth Laboratory Practice.

*To the Editor:*—The article in the last issue of *The Iron Age* entitled "Preliminary Tests from the Open Hearth Steel Furnace Practice in the Laboratory," by C. W. Danforth, has been noted with interest. This article undoubtedly presents to the uninitiated some useful ideas upon the analysis of preliminary tests, though the steel works chemist, who has long been accustomed to making such analyses, will find little that is new or superior to his present practice. We feel constrained to remark upon a few points in this paper not altogether concurrent with general conditions or practice.

In his comments upon the behavior of the various elements in an open hearth furnace bath, it appears that the author has formulated his opinions upon certain specific conditions, rather than upon general conditions peculiar to open hearth practice. The statements in regard to the conduct of manganese in the bath do not obtain for the different kinds of heats, particularly in the basic process. It is well known that in a basic open hearth furnace the behavior of manganese under varying conditions is very erratic, and even in the working of common scrap heats it is not safe to assume such narrow limits as given for the content of this element remaining in the metal at the time of tapping.

In the cooling of the test pieces preparatory to drilling, chilling in water is very properly condemned. Yet the practice of cooling by means of water is the one used, and it is very doubtful whether such a procedure is regularly practicable in rapid work, without producing more or less of the chilling effect. The reader is left in doubt as to the approximate temperature at which this cooling begins, as only the indefinite statement that "laboratory tests should always be received hot" is given. The assertion that segregation in steel is worst of all in preliminary test pieces is indeed surprising to those familiar with this phenomenon. If the writer will investigate the segregation in an ingot, he will find a variation both in the sulphur and phosphorus contents far exceeding that in the example cited.

The practice of adding 10 per cent. to the percentage of sulphur and phosphorus found in a preliminary test to closely check the heat test is at best questionable. There is no plausible reason for such a difference in the actual sulphur and phosphorus contents of the metal immediately before and after being tapped, and if such discrepancy is obtained in the analytical determinations, it must be due to variation in securing the tests or drillings,

or in the chemical methods of estimation. The assertion that phosphorus segregates to a less degree than sulphur cannot always be supported by facts; the general evidence shows little difference in the extent to which these elements segregate.

The impression is given that in the basic open hearth furnace sulphur is not removed from the metal to any appreciable extent. In mentioning pig iron and ore heats, the author makes this statement without reservation as to whether the basic process is included: "I believe that 99 times out of 100 if the true sulphur in the pig iron was determined it would show proper agreement with the sulphur in the steel." It is evident that the removal of sulphur from the metal in an acid open hearth furnace is impracticable. In the basic process, however, there is always an appreciable removal of this element, and under the influence of a very basic slag, other conditions being favorable, a fairly large proportion of the sulphur will be eliminated from the metal.

The use of a solution of both potassium hydrate and ammonia for the absorption of hydrogen sulphide in the sulphur determination will not be found prevalent among chemists in the Pittsburgh District. The advantage in the use of the two alkalies in the same solution is not obvious. The usual practice, in which an ammoniacal solution of a cadmium salt is employed for the absorption of hydrogen sulphide is superior from the fact that a precipitate is formed. The approximate percentage of sulphur may be estimated from the volume of this precipitate and the time necessary for the subsequent titration reduced.

The well known method for the determination of phosphorus, as here described, contains one or two details in which most chemists will not concur. Of the various reagents, which have been used or proposed for reduction of the manganese dioxide precipitated in this determination, sugar is one of the least desirable. The substitution of ammonium bisulphite would obviate the difficulty which sometimes occurs in dissolving this precipitate with sugar solution. That complete precipitation of the phosphorus may always be effected by one minute's shaking is improbable. Such a short period of time for agitation, followed by immediate filtration, doubtless often leads to low results. In the precipitation of phosphorus it is almost a universal practice to agitate the solution for five minutes. By the method as given in this article, the practice of adding at least 10 per cent. to the phosphorus result obtained would appear wise.

Under the carbon determination the statement appears that "the laboratory determination of carbon is the oftentimes asked for, and is the hardest to give correctly." Here again is a fallacy, which cannot be overlooked. In ordinary plain steel, with proper preliminary heat treatment of the test, and with the use of a standard of the necessary requisites, the color carbon determination will yield results closely agreeing with those obtained by the combustion method. Certainly the color carbon estimation properly performed is more accurate than are the sulphur and phosphorus results obtained by the methods here described.

After a careful perusal of this article, after balancing the equation of its merits and demerits, the impression remains that it comprises too many broad assertions founded upon a very limited range of experience.

THE TEST BOY.

The Republic Iron & Steel Company has asked the councils at Youngstown, Ohio, to vacate certain streets. Having bought some property adjoining these streets it desires to get the site in shape for the building of an open hearth steel plant, but work on which will not be commenced until trade conditions improve. The company had plans made some time ago for the building of an open hearth plant at Haselton, near Youngstown, but it was decided to lay the matter aside until better times. It will blow in this week its No. 3 furnace at Hazelton and Hannah Furnace at Youngstown, making all of its four furnaces in the Youngstown District in blast. Its Atlantic Furnace at New Castle and Hall Furnace at Sharon, Pa., are both idle, and it is not intended to start them for some time.

## The Payne Tariff Bill Passes the House.

### A Number of Changes from the Original Draft.

WASHINGTON, D. C., April 13, 1909.—The Payne tariff bill, introduced in the House March 17 and reported on the following day, was passed at 8.20 p.m. on the 9th inst. after an extraordinary parliamentary struggle in which the majority leaders were more than once defeated on propositions of the highest importance. A combination embracing practically the entire membership of the minority, assisted by a score or more of majority members, several times caught Chairman Payne and his colleagues off their guard. On one occasion minority leader Clark, assisted by both Democrats and Republicans, reduced by one-half the proposed rate of duty on fence wire, but later in the debate the Republicans rallied to Mr. Payne's standard and, a motion for reconsideration prevailing, the rate as fixed by the Ways and Means Committee was restored.

Upon the conclusion of general debate in the House, which closed a few hours before the last issue of *The Iron Age* went to press, the bill was taken up for consideration by items, preference being given to amendments which members desired to offer to the paragraphs relating to hides, lumber, barley and barley malt, oil and tea and coffee. In spite of efforts made to change the provisions relating to these items as agreed upon by the Ways and Means Committee, the position of the majority was sustained except on oil, which was placed on the free list. The House then took up the bill by schedules, which it proceeded to perfect by the incorporation of amendments reported by the Ways and Means Committee.

#### Changes in the Metal Schedule.

Following are the changes made in the metal schedule of the bill as passed by the House, the omissions from the bill as first reported being in parentheses and the additions to it in *italics*, all other paragraphs than those here given being unchanged:

118. Round iron, in coils or rods, less than seven-sixteenths of one inch in diameter, and bars or shapes of rolled or hammered iron, not specially provided for in sections one or two of this Act, six-tenths of one cent per pound: Provided, That all iron in slabs, blooms, loops, or other forms less finished than iron in bars, and more advanced than pig iron, except castings, shall be subject to a duty of four-tenths of one cent per pound: Provided further, That all iron bars, blooms, billets, or sizes or shapes of any kind, in the manufacture of which charcoal is used as fuel, shall be subject to a duty of (six) *ten* dollars per ton.

120. Boiler or other plate iron or steel, except crucible plate steel and saw plates hereinafter provided for in sections one or two of this Act, not thinner than number ten wire gauge, cut or sheared to shape or otherwise, or unsheared, and skelp iron or steel sheared or rolled in grooves, *valued at one cent per pound or less, three-tenths of one cent per pound; valued above one cent and not above two cents per pound, four-tenths of one cent per pound; valued above two cents and not above four cents per pound, seven-tenths of one cent per pound; valued at four cents per pound, twenty per centum ad valorem:* Provided, That all sheets or plates of iron or steel thinner than number ten wire gauge shall pay duty as iron or steel sheets.

129. Steel ingots, cogged ingots, blooms, and slabs, by whatever process made; die blocks or blanks; billets and bars and tapped or beveled bars; mill shafting material; pressed, sheared, or stamped shapes, not advanced in value or condition by any process or operation subsequent to the process of stamping; steel saw plates wholly or partially manufactured; hammer molds or swaged steel; gun-barrel molds not in bars; alloys used as substitutes for steel in the manufacture of tools; all descriptions and shapes of dry sand, loam, or iron-molded steel castings; sheets and plates and steel in all forms and shapes not specially provided for in sections one or two of this Act, all of the above valued at *eight-tenths of one cent per pound or less, seven-fortieths of one cent per pound; valued above eight-tenths, one cent and not above one and three-tenths (four-tenths) cents per pound, three-tenths of one cent per pound; valued above one and three (four-) tenths and not above one and eight-tenths cents per pound, five-tenths of one cent per pound; valued above one and eight-tenths cents and not above two and two-tenths cents per pound, six-tenths of one cent per pound; valued above two and two-tenths cents and not above three cents per pound, eight-tenths of one cent per pound; valued above three cents per pound and not above four cents per*

pound, one and one-tenth cents per pound; valued above four cents and not above seven cents per pound, one and two-tenths cents per pound; valued above seven cents and not above ten cents per pound, two cents per pound; valued above ten cents and not above thirteen cents per pound, two and three-tenths cents per pound; valued above thirteen cents and not above sixteen cents per pound, two and seven-tenths cents per pound; valued above sixteen cents and not above thirty cents per pound, four and six-tenths cents per pound; valued above thirty cents per pound, fifteen per centum ad valorem.

138. On all iron or steel bars or rods or whatever shape or section which are (cold rolled, cold drawn, cold hammered, or polished in any way in addition to the ordinary process of hot rolling or hammering), *hammered, blued, brightened, tempered, polished, or treated in any way in addition to cold rolling to size,* there shall be paid one-eighth of one cent per pound in addition to the rates provided in sections one or two of this Act on bars or rods of whatever section or shape which are hot rolled; and on all strips, plates, or sheets of iron or steel, of whatever shape, other than the polished, planished, or glanced sheet iron or sheet steel hereinbefore provided for, which are cold rolled, cold drawn, cold hammered, blued, brightened, tempered, or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid five-tenths of one cent per pound in addition to the rates provided in sections one or two of this Act upon strips, plates, or sheets of iron or steel of common or black finish of corresponding gauge or value; and on steel circular saw plates there shall be paid one-half of one cent per pound in addition to the rates provided in this section for steel saw plates.

150. Lap-welded, butt-welded, seamed, or jointed iron or steel boiler tubes, pipes, flues or stays, not thinner than number sixteen wire gauge, if not less than three-eighths of an inch in diameter, one cent per pound; if less than three-eighths of an inch and not less than one-fourth of an inch in diameter, one and one-half cents per pound; if less than one-fourth of an inch in diameter, two cents per pound; cylindrical or tubular tanks or vessels, for holding gas or liquids, thirty per centum ad valorem; flexible metal tubing or hose, not specially provided for in sections one or two of this Act, whether covered with wire or other material, or otherwise, including any appliances or attachments affixed thereto, thirty per centum ad valorem; welded cylindrical furnaces, *tubes or flues made from plate metal and corrugated, ribbed or otherwise reinforced against collapsing pressure (made from plate metal),* two cents per pound; all other iron or steel tubes, finished, not specially provided for in sections one or two of this Act, thirty per centum ad valorem.

151. Penknives, pocketknives, clasp knives, pruning knives, budding knives, erasers, manicure knives, knives or razors for cutting corns, and all knives by whatever name known, including such as are denominatively mentioned in this Act, which have folding or other than fixed blades or attachments, valued at not more than forty cents per dozen, forty per centum ad valorem; valued at more than forty cents per dozen and not exceeding fifty cents per dozen, one-cent per piece and forty per centum ad valorem; all such cutlery, or parts thereof, wholly or partly manufactured, valued at more than fifty cents per dozen and not exceeding one dollar and *twenty-five (fifty) cents per dozen, five cents per piece and forty per cent. ad valorem; valued at more than one dollar and twenty-five (fifty) cents per dozen and not exceeding three dollars per dozen, ten cents per piece and forty per centum ad valorem; valued at more than three dollars per dozen, twenty cents per piece and forty per centum ad valorem:* Provided, That any of the foregoing knives or erasers if imported in a condition assembled but not fully finished, shall be dutiable at not less than the rate of duty herein imposed upon the value of finished on erasers of the same material and quality: And provided further, That blades, handles, or other parts of either or any of the foregoing articles imported in any other manner than assembled in finished knives or erasers, shall be subject to no less rate of duty than herein provided for the knives and erasers mentioned herein valued at more than fifty and not more than one dollar and *twenty-five (fifty) cents per dozen. Razors and razor blades, finished or unfinished, valued at less than one dollar and fifty cents per dozen, fifty cents per dozen and thirty per centum ad valorem; valued at one dollar and fifty cents per dozen and less than three dollars per dozen, one dollar per dozen and thirty per centum ad valorem; valued at three dollars per dozen or more, one dollar and seventy-five cents per dozen and thirty per centum ad valorem.* Scissors and shears, and blades for the same, finished or unfinished, valued at not more than fifty cents per dozen, fifteen cents per dozen and fifteen per centum ad valorem; valued at more than fifty cents and not more than one dollar and seventy-five cents per dozen, fifty cents per dozen and fifteen per centum ad valorem; valued at more than one dollar and seventy-five cents per dozen, seventy-five cents per dozen and twenty-five per centum ad valorem.

182. Chrome or chromium metal, ferromanganese, ferrochrome or ferrochromium, ferromolybdenum, (ferrophos-



phate), ferrophosphorus, ferrotitanium, ferrotungsten, ferrosilicon, containing more than fifteen per centum of silica, ferrovanadium, manganese metal, molybdenum, titanium, tantalum, tungsten or wolfram metal, fifteen per centum ad valorem; ferrosilicon containing not more than fifteen per centum of silica and ferromanganese, four dollars per ton.

194. Cash registers, electrical apparatus and machinery, jute-manufacturing machinery, linotype and all typesetting machines, machine tools, printing presses, sewing machines, typewriters, and all steam engines, thirty per centum ad valorem; embroidery machines and lace-making machines, including machines for making lace and machines for making nets and netting, forty-five per centum ad valorem: Provided, however, That all embroidery machines and lace-making machines, including machines for making laces and machines for making nets and netting, imported prior to July first, nineteen hundred and eleven, shall be admitted free of duty.

The fluorspar duty, which in the bill as reported was fixed at 50 cents per ton on crude and \$1.75 per ton on crushed, was changed to a flat \$1.50 on both grades.

The duties on mica were changed without debate from 30 per cent. on crude to 5 cents per pound and 20 per cent. ad valorem, and from 35 per cent. ad valorem on manufactured to 10 cents a pound and 20 per cent. ad valorem.

#### The Ferroalloy Controversy.

An important change was made in paragraph 182, relating to ferroalloys. This feature of the tariff bill has been the subject of a spirited controversy participated in by domestic manufacturers and foreign producers as well as the domestic steel manufacturers, who use these products in large quantity. The Payne bill placed all the ferroalloys in a single paragraph, carrying a duty of 15 per cent. ad valorem. This rate was strongly opposed by the steel makers, who declared that there was nothing in the cost of the ores or the labor required to produce ferroalloys that would justify so high a rate upon what is practically a raw material of the steel producer. The domestic manufacturers of the alloys appeared to be in a very strong position, however, and the Ways and Means Committee was finally induced to report an amendment reducing the rate on all ferromanganese and on ferrosilicon containing not to exceed 15 per cent. of silicon to \$4 per ton, which is the Dingley rate on ferromanganese and ferrosilicon, but leaving the 15 per cent. rate on all the other alloys.

#### The Drawback Section.

An important change in the drawback section of the bill as reported was made by the adoption of an amendment offered by Chairman Payne providing that "no drawback shall be allowed under this section upon domestic material except upon due proof that the imported material upon which the drawback is allowed has entered into manufacture." Under the bill as reported a manufacturer could collect drawback on the exportation of goods manufactured of domestic material if he could prove that he had imported a sufficient quantity of imported material of like quality to produce the goods, but, believing that this provision opened the door too wide, the committee decided to require that proof must be given that the imported material has been manufactured, but without regard to whether the finished products have been exported or remain in this country.

#### The Scrap Duty.

Presented herewith are two interesting briefs regarding the duty on iron and steel scrap. The first, which was addressed to the chairman of the Ways and Means Committee, is as follows:

In connection with the proposed revision of the Dingley tariff, your attention has already been called, both by individual statements and by briefs, to the matter of scrap iron and scrap steel. The subscribers to this brief, representing many millions of invested capital and many thousands of workmen, again bring to your notice the opportunity offered by this commodity to meet the popular demand for tariff revision, and to provide an increased revenue for the Federal Government, with great benefit to all manufacturers of open hearth steel, and the labor employed by them, and without injury to any one.

If it be your desire to so legislate as to provide additional revenue for the Government, we recommend a duty not exceeding 50 cents per ton. We believe that such a duty would allow of large imports from Cuba and the West Indies, from South America, and at times from England, Germany and Belgium, and would result in greatly increased revenue;

while under the present tariff, imports have been so small that the revenue therefrom has been only nominal.

Paragraphs 492, 505, 533, 637 and 690 of the Dingley tariff provide for the free admission of the scrap of other metals for remanufacturing, notably copper and brass.

We believe that the same reasoning that placed these articles on the free list should govern in the case of scrap iron and scrap steel, to at least the extent of a greatly reduced duty. There is no capital invested or labor employed in its manufacture; it is strictly a by-product, the result of waste and wear, so that manufacturer, laborer, dealer and consumer alike would benefit by increased imports.

There is a shortage in the supply available for use in open hearth furnaces, brought about largely by the gradual passing of the Bessemer furnace, which produces scrap, and the rise of the open hearth furnace, which consumes scrap. The following figures speak for themselves:

	Tons.
Production of Bessemer steel in United States in 1907.	11,667,549
Production of Bessemer steel in United States in 1897.	5,475,315
Increase since 1897.....	6,192,234
Or increase of over 113 per cent.	
Production of basic open hearth steel in United States in 1907.....	10,279,315
Production of basic open hearth steel in United States in 1897.....	1,056,043
Increase since 1897.....	9,223,272
Or increase of over 873 per cent.	
Production of basic pig iron in United States in 1907.	5,375,219
Production of basic pig iron in United States in 1897.	556,391
Increase since 1897.....	4,818,828
Or increase of over 866 per cent.	

You will note: (a) That in the ten years from 1897 to 1907, the percentage of increase in the production of open hearth steel was nearly eight times as great as the percentage of increase in the production of Bessemer steel. (b) That during the same period the percentage of increase in the production of basic pig iron (which forms 50 per cent. of the charge in an open hearth furnace) was almost exactly the same as the percentage of increase in the production of open hearth steel.

In other words, the production of the chief manufactured ingredient of a ton of open hearth steel has kept pace with the demand; while, on the other hand, with manufacturers abandoning their Bessemer converters, we find ourselves facing a decreased production of scrap and an increased consumption, with a consequently steady decline in the available supply of scrap per furnace per annum. The result is a highly speculative market, working a hardship on all steel melters and dealers in scrap, and we believe that these evils would be greatly lessened by large importations.

We respectfully urge the serious attention of the Committee on Ways and Means to this matter. We are strong protectionists and believe that tariff revision should be handled only with great care and conservatism, but we believe, also, that an unmanufactured commodity, the supply of which in the United States is unequal to the demand, offers, as stated at the outset, a peculiarly good opportunity to revise the present schedule without harm to any one, and with genuine benefit to all those directly or indirectly interested in its consumption.

John A. Roebling's Sons Company, Ferdinand W. Roeb-ling, treasurer.

Sharon Steel Hoop Company, Morris Bachman, president.  
Alan Wood Iron & Steel Company, W. W. Lukens, as-  
sistant secretary and assistant treasurer.

Worth Brothers Company, W. P. Worth, treasurer.  
Lukens Iron & Steel Company, H. B. Spackman, pur-  
chasing agent.

The second brief, which was addressed to the Senate Finance Committee, is as follows:

We, the undersigned, employers of 30,000 workmen and with millions of invested capital, in behalf of ourselves and of manufacturers representing far larger interests, beg leave to present this supplemental brief in support of the duty of 50 cents a ton on scrap iron and scrap steel as provided in the Payne bill passed to-day by the House of Representatives.

We indorse fully the "Brief advocating a reduction in the duty on scrap iron and scrap steel submitted to the Committee on Ways and Means of the House of Representatives by John A. Roebling's Sons Company, Sharon Steel Hoop Company, Alan Wood Iron & Steel Company, Worth Brothers Company and Lukens Iron & Steel Company," a copy of which has been sent to each member of your honorable committee.

We deny absolutely the statement that pig iron and scrap are interchangeable.

We challenge the possibility of any large importations of pig iron disguised as scrap by breaking into small pieces or by other means.

In the face of the radical reductions in the duties on our manufactured products proposed in this revision of the tariff, we are entitled to the compensating advantage of this proposed change in the scrap schedule, scrap being one of our basic raw materials. We urge this because scrap is not a

manufactured commodity, so that a duty thereon protects neither labor nor capital.

Scrap is a necessity in the iron and steel business, irrespective of the price of pig iron and the quantity available. Our supply is limited and inadequate. To-day Canadian mills are importing American scrap from the New England States under their low duty, while under the Dingley rate importations into this country are impossible. The statement that large revenues are being derived from such importations is incorrect, as a reference to your Government reports will show.

Finally, if the low duties on our manufactured products provided in the Payne bill, as passed by the House of Representatives to-day, go into effect, we prophesy disaster to many mills on the Atlantic seaboard, unless we be given the advantage of this low duty on scrap iron and scrap steel so wisely provided by the Ways and Means Committee.

Portland Iron & Steel Company, Portland, Maine, R. M. Boutwell, treasurer.

Cape Ann Anchor Works, Gloucester, Mass., F. A. Fisher, president.

Aetna Nut Company, Southington, Conn., J. H. Pratt, president.

American Tube & Stamping Company, Bridgeport, Conn., F. A. Wilmot, president.

Washburn Wire Company, Phillipsdale, R. I., C. M. Van Slyck, general counsel.

John A. Roebling's Sons Company, Trenton, N. J., L. C. Taylor, purchasing agent.

Lukens Iron & Steel Company, Coatesville, Pa., A. F. Huston, president.

Worth Brothers Company, Coatesville, Pa., W. P. Worth, treasurer.

Parkesburg Iron Company, Parkesburg, Pa., George Thomas, 3d, treasurer.

Hoopes & Townsend Company, Philadelphia, Pa., Barton Hoopes, treasurer.

F. A. Godcharles Company, Milton, Pa., F. A. Godcharles, president.

Longmead Iron Company, Conshohocken, Pa., Lewis N. Lukens, president.

Sharon Steel Hoop Company, Sharon, Pa., O. A. Blackburn, vice-president.

Alan Wood Iron & Steel Company, Philadelphia, Pa., W. W. Lukens, assistant secretary and assistant treasurer.

Marshall Iron Company, Newport, Del., J. M. Mendin-hall, president.

Diamond State Steel Company, Wilmington, Del., John Richardson, Jr., trustee.

Collins Company, Collinsville, Conn., William Hill, president.

Pusey & Jones Company, Wilmington, Del., J. M. Mendin-hall, president.

Milton Mfg. Company, Milton, Pa., J. M. Shimer, president.

McFarland Foundry & Machine Company, Trenton, N. J., L. C. Taylor, treasurer.

Standard Horse Shoe Company, South Wareham, Mass., R. H. Boutwell, president.

Clark Brothers Bolt Company, Milldale, Conn., C. H. Clark, president.

### Steel Rail Business and Prospects in Canada.

TORONTO, April 10, 1909.—The Commissioners of the National Transcontinental Railway of Canada are calling for tenders for the supplying of 5154 gross tons of 80-lb. steel rails and the necessary fastenings for them. The rails are to be made of open hearth or Bessemer steel, at the option of the commissioners. They are to be laid down at West Fort William by June 15. The tenders are to be made on forms supplied by the commissioners, which forms, as well as the specifications, may be obtained from Hugh D. Lumsden, chief engineer, Ottawa, Ontario. Each tender must be accompanied by an accepted cheque on a chartered bank of the Dominion of Canada for a sum equal to 5 per cent. of the amount of the tender. Tenders will be received up to the 13th inst.

The Grand Trunk Pacific Railway Company has ordered 22,000 tons of 80-lb. rails for its own division of the National Transcontinental Railway line. The rails are to be delivered at Fort William after the opening of navigation. The company has also ordered from the Dominion Iron & Steel Company 13,000 tons of 80-lb. rails, and 2000 tons of 60-lb. rails, the latter to be used for sidings. The rails from Sydney will be delivered at Prince Rupert, the Pacific terminus of the railroad. They will be shipped by vessel over the long sea route via Cape Horn. This shipment will provide for the greater part of the first 100 miles of track, from the Pacific into the interior. This

section is to be ready for the rails by about midsummer. The contract for the next 100 miles will, according to the published expectations of the general manager of the railroad, be let in September.

These orders, along with other business that has come to hand recently, are keeping the two rail manufacturing companies employed. Mr. Franz says that the March business of the Algoma Steel Company was the best that the company has had since it began the manufacture of rails 7 years ago. The operation of the plant was continuous throughout the month. It is anticipated that the April operations will prove no less satisfactory. The output in March was nearly 5000 tons in excess of the largest former month's output. The company has work enough to keep its plant fully engaged for the next three months.

As was foreshadowed in a former letter, the Provincial Government has renewed the concessions formerly granted to the Algoma Central Railway, and the Manitoulin & North Shore Railway, both of which are owned by the Lake Superior Corporation, which likewise owns the Algoma Steel Company. Robert Fleming and associated capitalists now control the corporation. The large land grants to the two railroad companies mentioned are extended, and in the case of the Manitoulin & North Shore Line a cash subsidy of \$5000 per mile is added. New conditions, however, have to be fulfilled for the earning of this public aid. In the first place, the Algoma Central must be brought to a connection with the main line of the Canadian Pacific by the close of 1911. From May, 1910, up to the end of the next year the company must spend \$25,000 a month on the construction of the line. The Manitoulin & North Shore Line must also be completed by the end of 1911, and from July next to the following January \$15,000 a month must be expended on its construction. From that time onward the monthly outlay on construction account must be not less than \$25,000 per month. Besides fulfilling these conditions, the Lake Superior Corporation must spend upon betterments of existing works and construction of new ones \$1,500,000 before the end of 1910.

It is understood that the plans of the interests now dominant in the Lake Superior Corporation call for an expenditure in the next three years of much more than the stipulated \$1,500,000. Five million dollars is mentioned as the projected outlay upon betterments and new works. Among the new works contemplated are an additional blast furnace and another open hearth. The latter is to operate on the product of Canadian ore. Hence the company's Michipicoten mines and the branch of the Algoma Central connected with them will be operated much more vigorously than ever before. It is said, indeed, that the company has given assurance that it will use no iron ore for the bulk of its tonnage except what is of Canadian origin. This assurance is alleged to have strongly influenced the Government to reserve for the corporation's use the iron ores on the 1,439,000 acres which is to be thrown open for settlement and prospecting on the line of the Algoma Central.

Structural steel works are also to be added by the company, though these are not specified in the agreement with the Government. The new railroad mileage to be added is about 160 miles in all. The company gets the proceeds realized by the Government from the latter's disposal of 1,000,000 acres transferred to settlers on mining interests. The Government's bargaining away of land thus granted to the company under the old arrangement was done as in trust for the company.

C. A. C. J.

The Hirschberg-Williams-Washburn Company is a new firm of consulting and constructing engineers which has been organized at Milwaukee, Wis., with offices in the Stephenson Building. The senior member was connected with the Indiana Steel Company, L. D. Williams recently left the employ of the Northwestern Tile Company and F. E. Washburn has been associated with Ralph Modjeska, civil engineer, Chicago.

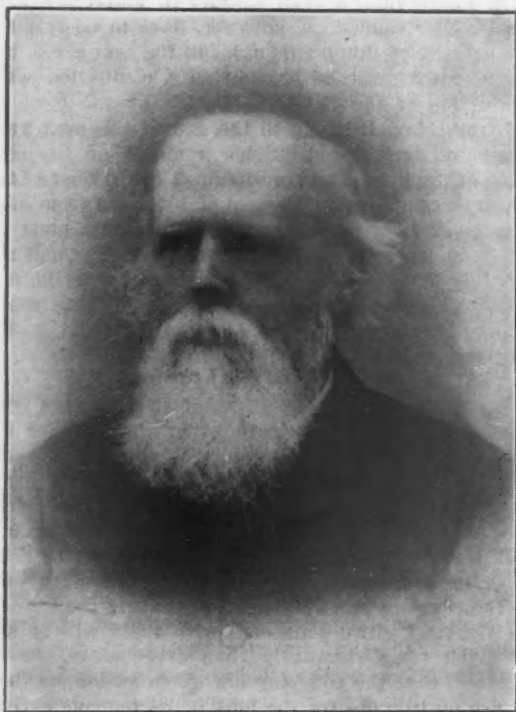
The Association of Milwaukee Foundrymen held a banquet at the St. Charles Hotel April 6. Henry Biegle was re-elected president.



### John Fritz Medal Presented to Charles T. Porter.

For his work in advancing the knowledge of steam engineering and for improvements in engine construction, Charles T. Porter, honorary member of the American Society of Mechanical Engineers, was awarded the John Fritz Medal by the committee representing the four national engineering societies. The presentation took place April 13, in the Engineering Societies Building, New York City. Henry R. Towne presided and addresses were made by Dean W. F. M. Goss, University of Illinois; Prof. F. R. Hutton, Columbia University; Robert W. Hunt, Chicago, and Frank J. Sprague, New York.

Dean Goss spoke of the altered conditions that came with the steam engine. The mines of England were freed of water, dormant industries revived, new systems of manufacture introduced, power, water and effective means of sanitation supplied to cities, and later by electric transmission came vastly improved lighting, power and transportation. Steamships and locomotives have been the means of extending civilization. Following this address, Mr. Porter was introduced by Jesse M. Smith, president of the American Society of Mechanical Engi-



CHARLES T. PORTER.

neers, and E. G. Spillsbury, chairman of the Awarding Committee, presented the medal and its accompanying certificate. A number of congratulatory letters and telegrams from John Fritz, the Iron & Steel Institute, Institution of Mechanical Engineers of Great Britain and others were then read.

Professor Hutton indicated as the most important work of Mr. Porter the introduction of higher speeds, with the solution of the problems involved, elevating the standard of mechanical construction and perfecting suitable condensers and governors. The address closed with a tribute to two of Mr. Porter's early associates, Prof. C. B. Richards and John F. Allen.

Mr. Hunt declared that iron and steel engineering owe a great deal to Mr. Porter. The remarkable development in the steel industry since the birth of the Bessemer processes was made possible practically by the application of a more rapid power. Among the first to attach the rolling mill engine direct to its train of rolls were John and George Fritz, but the speed of the short strokes was limited. Mr. Porter was the first to give the rolling mill engineer a controllable, direct connected, economical high speed engine. Mr. Hunt contrasted two engines in the old Albany & Rensselaer rolling mill plant in Troy, N. Y., in 1876. One set of rolls was driven by a walking

beam low pressure engine, taken from the steamboat Swallow, running at about 35 rev. per min., and the other set by Porter-Allen high speed engines.

Mr. Sprague recalled the French Exposition in 1867 where two Porter-Allen engines were the only high speed ones exhibited, and drove electric generators. In 1880 Mr. Porter installed a high speed engine in Edison's laboratory at Menlo Park, and shortly after for the Pearl street Edison station, New York, the first of a series of engines for so-called steam dynamos, each independently driven by a direct coupled engine. To Mr. Porter belongs the credit for first commercially demonstrating the high speed possibilities of the engine and opening the way for the present possibilities.

### British Iron and Steel Markets.

The first week in April showed some improvement in the demand for pig iron in Great Britain, and there was a better feeling in all metal markets there, due to the disappearance of the Serbian war cloud. An advance of 1 shilling on No. 3 foundry pig iron resulted from the buying in the Cleveland District, the quotation in the last week in March being 46 shillings to 46 shillings 6 pence, while in the first week in April it was 47 shillings to 47 shillings 6 pence. The shipments of Cleveland pig iron in March were 91,353 tons, compared with 67,487 tons in February. In March, 1908, they were 121,483 tons. The stock in Connal's stores was 195,170 tons at the close of the month, an increase in March of 21,861 tons. Some improvement in shipbuilding was expected to have its effect on the finished iron and steel trades, but the increase in demand was rather in rails, hoops, sheets and wire than in plates and shapes. Steel rails are quoted at £5 7s. 6d., ship plates at £6, Middlesbrough, and £6 7s. 6d., Glasgow; common bars at £6, South Staffordshire. In the last named district demand in finished lines is still very light. In the gas strip trade there were reports of sales at less than association prices, and the collapse of the agreement among Scotch producers of steel strip had its effect on the trade in the Midlands. Importations of steel billets were reported, chiefly from the United States, to the displacement of billets and sheet bars from British mills.

The Albany Car Wheel Company, Albany, N. Y., has been incorporated for the purpose of taking over and continuing the business of the Thacher Car Wheel Company, which has leased a section of its plant to the new company and regarding which mention was previously made. The capital of the new company is \$100,000. The directors are Joseph A. Kilpatrick of the Canadian Iron Corporation and Henry H. Vaughn of the Canadian Pacific Railway, Montreal, Canada; Herman F. Ball of New York, A. W. Kilpatrick of Detroit, Mich., and Daniel O'Connor of the Hamilton Steel & Iron Company, Hamilton, Canada. The section of the plant leased to the new company includes only that part lying north of Thacher street, the balance of it to be retained by the George H. Thacher Company in connection with its malleable foundry business. The lease covering the above deal became operative April 1.

Statistics compiled by the Pittsburgh Chamber of Commerce show that the freight movement in and out of the Pittsburgh District in 1907, exclusive of freight in transit, amounted to 161,194,167 net tons. This includes both rail and river freight. The total is said to exceed that of New York, London and Liverpool combined. Estimates made for 1905 showing a total of 103,000,000 tons, of which 11,000,000 tons was by river, were evidently considerably under the actual, since the increase could scarcely have been 55 per cent. in two years.

A London cablegram says that the Lake Superior Corporation, the principal subsidiary of which is the Algoma Steel Company, Sault Ste. Marie, Ont., will issue \$5,000,000 5 per cent. bonds at about 90.

## PERSONAL.

Thomas D. West has severed his official connection with the Thomas D. West Foundry Company, Sharpsville, Pa. Frank Tickner, recently of the Lackawanna Steel Company, has been appointed superintendent.

Charles A. Parsons, the inventor of the steam turbine bearing his name, is now visiting this country, having arrived in New York from England April 9. He says that probably 100 steamships are now operated with turbines and not one of them has broken down.

Among the recent arrivals in New York is Johann Holthaus, manager of the foundries of the Schalke Gruben u Huetten Verein of Gelsen-Kirchen, a subsidiary of the Gelsenkirchener B. A. G.

Teodor Modin, representing the Stora Kopparbergs Bergslags Aktiebolag and Döderfors Bruks Aktiebolag, Falun, Sweden, is now in this country.

The name of Sir R. A. Hadfield, Sheffield, England, appears in the list of 15 candidates recommended for election as fellows of the Royal Society for 1909.

James Donald, formerly of the New York Ship Building Company, Camden, N. J., has opened an office at 17 Victoria street, Westminster, London, as a consulting naval architect.

Ernesto Stassano, the well-known Italian pioneer in electric furnace work in iron and steel, will make his first visit to this country in May, attending the annual meeting of the American Electrochemical Society at Niagara Falls, Ont., for which he has prepared a paper.

W. A. Campbell, formerly connected with the Hicks Locomotive & Car Works, has accepted the position of sales manager for the General Railway Equipment Company, Chicago.

The H. W. Johns-Manville Company, Milwaukee, Wis., has engaged Wm. H. Hoag as salesman for the Southern trade.

T. E. Drohan, Minneapolis sales manager of the Northern Electric Works at Madison, Wis., has resigned to take a position with the General Electric Company.

B. A. Behrend, until recently chief engineer of the Bullock Electric Mfg. Company, has been engaged as a consulting specialist by the Westinghouse Electric & Mfg. Company, with office at Pittsburgh.

Geo. L. Hastings has been engaged as salesman by the Electric Improvement Company, Cleveland, leaving the employ of the Allis-Chalmers Company.

L. Clyde Smith, who has been connected with the American Blower Company, Detroit, Mich., for six years as art illustrator, working almost exclusively on apparatus details and illustrations for catalogue and trade journal work, has become one of the members of the firm of Hoffman, Smith & Hammer, commercial artists, 706 Trussed Concrete Building, Detroit, Mich.

Axel Wahlberg, general manager of the Fagersta Steel Company, Sweden, will arrive in New York April 15 to look up the market for Swedish iron and steel. He will make his headquarters at the Park Avenue Hotel.

Andrew Carnegie will probably sail for Europe on the 29th of this month.

Edgar S. Cook, president of the Warwick Iron & Steel Company, Pottstown, Pa., is expected back from his trip to Europe this week.

Dwight S. Guthrie, general manager of sales of the Republic Iron & Steel Company, at Birmingham, Ala., has been transferred to the Cleveland office. E. M. Barnes of the Chicago office has been transferred to the Birmingham office, vice Mr. Guthrie, and has assumed charge.

F. R. Kenyon, vice-president and general manager of the West Leechburg Steel Company, Pittsburgh, works at West Leechburg, Pa., has resigned and will rest for the next year or more.

James D. Ireland has been appointed general manager of the iron ore mining interests of M. A. Hanna & Co. in the Northwest, with offices at 406 Sellwood Building, Duluth, Minn., the appointment to take effect April 15.

He is a brother of Robert L. Ireland of M. A. Hanna & Co. and a graduate of Yale and the Massachusetts Institute of Technology. He has had considerable mining experience, and for the past year has been associated with the Hanna ore interests.

E. C. Cummins, master mechanic of the Gorgona shops of the Isthmian Canal Commission, is in this country on a three months' vacation.

J. C. Corns, for some years manager of the Corns plant of the Republic Iron & Steel Company at Massillon, Ohio, has resigned, and Harry Beatty has been appointed to succeed him.

The Carpenter Steel Company, Reading, Pa., announces that Russell Dale, formerly sales manager of the Celfor Tool Company, has been appointed its Chicago representative, with headquarters in the Commercial National Bank Building, Chicago, Ill.

C. B. Goodspeed of Columbus, Ohio, has been placed in charge of the Chicago office of the Buckeye Steel Castings Company. He is a son of the late W. F. Goodspeed, founder of the company, and a director in the corporation.

James G. Cowling, for many years purchasing agent for the J. I. Case Threshing Machine Company, Racine, Wis., has resigned to become general manager of the Pierce Motor Company, Racine, and will enter upon the duties of this position in the near future.

W. A. Rogers of Rogers, Brown & Co., Buffalo, N. Y., has returned from a trip to Constantinople.

Benjamin Nicoll of B. Nicoll & Co., New York, is back from a yachting trip in the Antilles.

W. B. Dickson, first vice-president of the United States Steel Corporation, delivered a lecture in the post-graduate course in economics at Harvard University to-day.

## OBITUARY.

R. D. CARVER, assistant general sales agent and general manager of the Chicago branch of the Pittsburgh Steel Company, died April 11 of pneumonia, at his home in Chicago. He was born in Cincinnati in 1865, and was connected with the Cincinnati Barb Wire Company when it was taken over by the American Steel & Wire Company. Entering the employ of the latter interest at the time, he later became identified with the Southern Steel Company, which he served in the capacity of secretary until May of last year, when he removed to Chicago to accept the position he occupied at the time of his death. He leaves a widow and four children.

WILLIAM WARD, Southington, Conn., superintendent of the H. D. Smith Company, hardware manufacturers, died April 11, aged 67 years. He had held the position for many years, had been active as an inventor and was an important factor in the building up of the business. He was a native of Fairfield, Conn. He saw active service in the Union army during the Civil War, and in 1879 was a manufacturer of carriage forgings at Newark, N. J. In 1883 he went with the H. D. Smith Company as superintendent. He leaves a widow, a son and two daughters.

EDWARD THEODORE CUSHING, Chicago, died April 6, aged 64 years. He was born in that city and had resided there all his life. Since its incorporation in 1883, Mr. Cushing was secretary and treasurer of the Dearborn Foundry Company. He was an active religious worker, and was also a member of the Union League and Kenwood clubs. He leaves a widow and a daughter.

In a monograph of 246 pages, 6 x 9 in., the Bureau of Manufactures, Department of Commerce and Labor, Washington, has brought together, with illustrations, the reports of Capt. Godfrey L. Carden on the "Machine Tool Trade in Germany, France, Switzerland, Italy and United Kingdom." Extracts from these reports have appeared from time to time in *The Iron Age*, taken from the *Daily Consular and Trade Reports* of 1908. Manufacturers and others desiring copies may obtain them by addressing the Bureau of Manufactures.



## The National Metal Trades Association.

### Opening of the Eleventh Annual Convention in New York on Wednesday, April 14.

The opening of the eleventh annual convention of the National Metal Trades Association at the Hotel Astor, New York, on Wednesday, April 14, was marked by an unusually large attendance, nearly 200 members having registered before the meeting was called to order by President F. K. Copeland of the Sullivan Machinery Company, Chicago. Patrick H. McGowan, President of the Board of Aldermen of New York, was introduced to welcome the delegates to the city, which he did in a creditable manner. He made it a point to impress the association with the advantages of industrial education, which he said was the best reason for the existence of manufacturers' organizations.

The formal organization of the convention by the appointment of convention committees followed, and the president then made his annual report. It appeared from Mr. Copeland's statement that while there has been a falling off in the membership of the association because of business depression, the year was a decidedly successful one as regards the work accomplished.

#### The President's Report.

Mr. Copeland said in part:

The active interest taken in industrial education by our association has begun to show most gratifying results, and, while not as much has been accomplished as had been hoped, our entire membership is alive to the importance of the question, and valuable work is being done, all the way from the isolated shop with its night school for apprentices up to the co-operative courses in operation in Cincinnati and Chicago. You are familiar with the work that has been done in Cincinnati. The Chicago plan has been worked out along much the same lines in connection with the Lewis Institute, 40 boys being now enrolled. They are showing keen interest in their work and will soon be what we all need—educated, practical mechanics—with the knowledge necessary to make high grade foremen and superintendents.

We know what poor opportunities the middle-aged foreman in our employ had to learn anything but his trade. How much more valuable or possibly how much earlier these same men would have become valuable, had they had the advantages that are now being offered to boys in these co-operative courses.

The last session of Congress was a period of anxiety for all employers of labor. The labor interests were very active and aggressive, and kept up strong pressure both on Congress and the administration. As you know, they accomplished nothing, owing to the effective work done in Washington by our representative and others. The combining of our interests in this matter with those of the National Founders' Association, as handled by the joint committee of the two bodies, has worked most satisfactorily and should help to bring about a still closer affiliation of these two strong organizations, that are working along the same lines and toward the same ends.

Our record as an organization in handling strikes has been a remarkable one. We have "blazed the way" in the open shop movement. Our efforts in this direction have been a marked feature in the movement toward independence of the laboring man. I know of no other organization that has done as much, and I believe that, owing to this hard and expensive work, the mind of the non-employing public has been educated to see that the employer is not always wrong and the unions right—a condition that came pretty near existing five years ago. The change is a very valuable and important one, as any movement to be successful must have the backing of intelligent public opinion.

The grave question confronting us, as I see it to-day, is whether we are wise enough, progressive enough and generous enough to treat our nonunion or independent workman that he can feel that he is better off outside the union than in it. If this cannot be done, we shall always be in a state of armed neutrality; if it can be, we shall be building up an army of defenders of the open shop principle.

Premiums and bonus systems and profit sharing may do what we want, and we hope to learn something from the discussion of these topics during this convention. If the National Metal Trades can help to find a solution of these problems, it will continue to lead in the future, as it has in the past, in the wise development of the great question of the relations of the employer and the employee.

The report of Treasurer William Lodge was a satisfactory one to the members, and Commissioner Robert Wuest was next introduced to make his annual statement of the organization's affairs.

#### The Commissioner's Report.

After stating that the association was never in a better position to protect the rights of its members, Mr. Wuest went on to say:

During the past year conditions were such that it would have been unwise for labor organizations merely to demonstrate their strength to hazard the employment of their members by calling strikes to enforce unreasonable demands, and as a result I have but one strike case to report.

On March 1, 1908, the beginning of our fiscal year we had 741 members in good standing. During the year just passed our membership was increased by 21 enrollments. A total of 23 resignations was accepted up to March 1, 1909. There were pending at the time of the recent meeting of our Administrative Council 21 resignations and 13 applications for membership were acted upon, making the total membership in good standing at this time 733.

Many of the resignations referred to include members who were expelled upon the recommendation of the Executive Committee, and such members whose business affairs were placed in the hands of receivers.

The labor bureaus which are operated by our various branches have demonstrated their value during the past year of spasmodic business, by their ability to supply to the members workmen and to the unemployed workmen positions. The past year these labor bureaus have registered 76,386 applications for positions, and secured work for 7837 applicants. The records of 291,038 workmen coming under the classification of our association are on file in these offices to-day, a record which it would be practically impossible, regardless of expense, for any one manufacturer or corporation or even the Department of Commerce and Labor of the United States to duplicate, without the assistance of our entire membership.

#### The Alumni Association.

On Tuesday the Administrative Council held an important session, and that night the Alumni Association, composed of former officers of the organization, held its annual dinner. About 35 men attended the banquet, which was presided over by M. H. Barker, American Tool & Machine Company, Boston, Mass. There was considerable discussion during the evening over the advisability of establishing closer relations with the National Foundrymen's Association, and all who spoke of the plan gave it their hearty approval.

A handsome gold watch was presented to President F. K. Copeland by the alumni. H. W. Hoyt, Great Lakes Engineering Works, Detroit, made the presentation speech, and he did it in a most felicitous manner.

A meeting of mechanical engineers living in and near Boston is called for the evening of April 16, at 8 o'clock, in the auditorium of the Edison Electric Illuminating Company, 39 Bolyston street, Boston, Mass., for the purpose of discussing a plan for holding in Boston meetings of the American Society of Mechanical Engineers, for the reading and discussion of papers, similar to those held in New York. Jesse M. Smith, president; Calvin W. Rice, secretary, and Willis E. Hall, chairman of the Meetings Committee of the society, are expected to be present at the proposed meeting, which has the cordial approval of the parent society.

The New York State Steel Company, Buffalo, N. Y., has awarded to the Frank Sweet Structural Steel Erection Company of that city a contract for the erection of the structural steel, about 800 tons, in the new ore unloading and hoisting trestle and skiphouse it is building at its blast furnace and steel plant. The steel for this work was fabricated some months ago by the Buffalo Structural Steel Company and the Pittsburgh Steel Construction Company, before the reorganization of the New York State Steel Company.

Elwyn Waller and H. Stanley Renaud, consulting chemists, 159 Front street, New York, have recently issued a reprint of a paper which they jointly prepared dealing with lignite briquettes and describing a system for the utilization of low grade coal, now extensively used in Germany. No extraneous binder is used, but the "friction of the briquettes against the sides of the mold form" develops so much heat as to melt the resinous constituents of the lignite, which under heavy pressure act as a binder."

## NEWS OF THE WORKS.

## Iron and Steel.

The purchasers of the property of the Franklin Rolling Mill & Foundry Company, Franklin, Pa., have incorporated the Franklin Steel Company, with a capital stock of \$750,000, to operate the plant. The officers of the new company are Edward B. Leigh, president; Edward E. Hughes, vice-president and general manager; Cyrus T. Mackey, assistant general manager; L. W. Barnett, secretary.

The Crucible Steel Company of America has started up its spring department at McKees Rocks, Pittsburgh, which has been idle for a year or more.

Owing to a serious explosion, No. 1 furnace of the Carnegie Steel Company, at South Sharon, Pa., will be idle for some weeks for repairs. No. 1 was the only one of the three stacks in operation. No. 3 has now been started and will be operated until No. 1 is ready.

The Phillips Sheet & Tin Plate Company, Clarksburg, W. Va., is setting up a new engine and will put in operation the four mills thrown idle recently by an accident. The company will then have 12 tin mills in operation.

The new open hearth plant at the Ohio Works of the Carnegie Steel Company, Youngstown, Ohio, consisting of 12 50-ton furnaces, is practically completed, but at present only three furnaces are being operated. The others will be started when conditions warrant.

## General Machinery.

The Oklahoma Street Railroad, Oklahoma City, Okla., has completed plans for its new car barns and repair shops, and construction work will be started as soon as the present sheds can be disposed of. There will be a main car storage building, 100 x 160 ft., with eight tracks running through it; an inspection shed, 50 x 200 ft., with four tracks running through it; machine shop, 50 x 125 ft.; storeroom, 85 x 125 ft.; woodworking shop, 50 x 100 ft.; paint shop, 45 x 100 ft., and office building. The buildings will be one story, of brick and concrete construction, and the entire group will cover 14 acres, which were purchased about two years ago for the new shops.

The recently organized Prest Machine Works Company, Oklahoma City, Okla., has under construction a new machine shop, for the equipment of which machinery has already been purchased. In addition to doing general repair work, the company will carry a line of mill and factory supplies.

W. J. Alford, North Birmingham, Ala., is in the market for two 4 or 5 hp. motors, 220 volts, direct connected, new or second-hand, also a vertical boring and turning mill of about 10 ft. swing and of some well-known make.

## Foundries.

The Western Iron & Foundry Company, Wichita, Kan., has been purchased from the receiver, in whose hands the business was placed about 30 days ago, by J. F. Warren and Henry Anthony, members of the former copartnership. The receivership was applied for as a preliminary step to the reorganization of the company.

The Stiles Foundry & Supply Company, Parkersburg, W. Va., was placed in the hands of a receiver last week.

The foundry building No. 2, comprising about one-half the capacity of George H. Thacher & Co., Albany, N. Y., which was leased a short time ago to J. A. Kilpatrick, manager of the Canada Iron Corporation, will be operated by the Albany Car Wheel Company, which has been incorporated with a capital stock of \$100,000, to manufacture car wheels.

L. O. Hoffman, Newton, N. C., is interested in the establishment of a foundry at Rutherfordton, N. C. Some little equipment will be required, including a gas producer and 6- or 8 hp. gas engine, pipe, shafting and supplies.

The Pennsylvania Steel Company, Steelton, Pa., is building an addition to its main steel foundry, 67 x 306 ft., with a runway for a 30-ton overhead electric traveling crane. The new equipment for the building will include one 50-ton and one 30-ton crane, new core ovens and annealing furnaces and special appliances for treating Manard steel castings.

Frank Wyatt, owner of the Wyatt Mfg. Company, manufacturer of farm implements, Salina, Kan., has purchased two lots near his present foundry on which he will erect a new building, 50 x 120 ft., two stories high. The lower floor will be used for offices and foundry and the second story for a pattern shop. Work of construction will be started about May 1.

The plant of the Birmingham Pipe & Casting Company, located at Birmingham, Ala., which has been idle for 18 months, has been acquired by the American Radiator Company, Chicago, and will be put in operation as soon as the necessary equipment can be installed.

The addition to the soil pipe foundry of the Bessemer Soil Pipe Company, Bessemer, Ala., is practically complete, and it will be put in operation in a few weeks.

The Frontier Iron Works, Buffalo, N. Y., has let contract for construction of its extensive foundry building and two-story brick machine shop at Letchworth and Grant streets and the New York Central Railroad.

Work is being pushed on the new foundry of the Central Foundry Company at Anniston, Ala., and it is expected that the plant will be in operation within 60 or 90 days.

## Power Plant Equipment.

The R. Munroe & Sons Mfg. Corporation, Pittsburgh, builder of the Munroe patent safety water tube boilers, tanks, stacks, &c., last week delivered to the National Biscuit Company of that city a Scotch marine type of boiler, 9 ft. 6 in. in diameter by 16 ft. long, equal to 200 hp. and intended for 150 lb. working pressure. The boiler weighs 22 tons, and the manufacturer claims it is of a type and size seldom used in that district.

The Uniform Fibrous Tale Company, which is to erect its mills at Taleville, N. Y., near the mines it owns, will build a hydro-electric plant at that point and install necessary power plant equipment.

It is stated that the Westinghouse Electric & Mfg. Company, East Pittsburgh, did 30 per cent. more business in March than in February. It is also stated that the Westinghouse Machine Company, also of East Pittsburgh, received more orders in March than in any one month for a year and a half.

The New Jersey Engineering & Supply Company, Passaic, N. J., has purchased from Milwaukee builders an extensive line of electrical machinery, including generator and motors.

The Hazelton Water Works Company, Hazelton, Ind., will let contract for the construction of a plant April 22.

The F. M. Benner Company, Marion, Ind., has been awarded contract to construct a sewage disposal plant at Oxford, Ohio.

## Bridges and Buildings.

The Board of Commissioners of Wayne County, Indiana, meeting at Richmond, will let contracts April 24 for bridges to cost \$25,000.

The Caldwell & Drake Iron Works, Columbus, Ind., has secured the contract for the new court house at Omaha, Neb., the structural iron work on which will cost about \$150,000.

The Modern Steel Structural Company, Waukesha, Wis., has received an order from the Chicago & Northwestern Railroad for 2000 tons of structural steel for track elevation at Milwaukee. Considerably more will be required here in the near future if the city's plans are carried through. The company also has the contract for the steel work for an addition to the plant of the Racine Novelty Mfg. Company, Racine, Wis.

## Fires.

The foundry and machine shop of Willig & Gunselman, Temple, Texas, were burned April 3, with a loss of about \$5000.

The plant of the Zellerbach Paper Company, Los Angeles, Cal., was burned April 6, the loss being about \$100,000.

The plant of the Du Pont Powder Company at Wayne, N. J., was destroyed by an explosion April 9, the loss being about \$200,000.

The plant of the Nicholas & Langworthy Machine Company, Hope Valley, R. I., was burned April 13, the loss being about \$100,000.

The main building of the Ahlbrand Carriage Company's plant at Seymour, Ind., burned April 10, the loss being \$50,000.

## Hardware.

The Acme Shear Company, Bridgeport, Conn., manufacturer of shears and scissors, has practically completed plans for an additional factory building, 35 x 125 ft., with ell 30 x 53 ft., the whole to have two stories and basement. It will be of heavy mill construction. The company has sufficient boiler and engine power to operate the new building, and has arranged for all the necessary new machinery. The new building will permit the addition of 100 men to the working force, and will enable the company to take care of its largely increased business.

The American Steel Ladder Company, recently incorporated with \$125,000 capital stock, has secured a plot of ground, 60 x 360 ft., in McKeesport, Pa., on which a one-story building will be erected for the manufacture of pressed steel stepladders. W. C. Cronmeyer is president, E. B. Adler vice-president, and J. S. Musler secretary and treasurer. The ladder is at present being manufactured at the stove and range factory of Adler & Co., Carnegie, Pa.

The Jones Automatic Measuring Pump Company has been incorporated at Shelbyville, Ind., with \$25,000 capital stock, to manufacture a new measuring pump for oils, syrups or other liquids. The officers are: President, Thomas E. Goodrich; vice-president, Chas. S. Jones; secretary, Dr. R. B. Minnis, and treasurer, Harry Hageman.

## Miscellaneous.

The Buhse Machine Mfg. Company, Minneapolis, Minn., incorporated with a capital stock of \$150,000, has equipped a factory for the manufacture of candy wrapping machines, which will be ready for the market in about 60 days.

The organization of a new stove company known as the Iowa Stove & Range Company, Waterloo, Ia., has been practically completed. It will have a capital stock of \$50,000, of which two-thirds is to be paid in at once.

The Union Draft Gear Company, Chicago, has been incorporated with a capital stock of \$2,000,000, to manufacture and



deal in railroad specialties, equipment and appliances. The incorporators are Matthew J. O'Brien, Daniel L. Madden and Francis O'Shaughnessy.

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Lead has been advanced to 4.15c., New York, and spelter is firmer at 4.77½c., St. Louis.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Apr.14, 1909.	Apr.7, 1909.	Mar.17, 1909.	Apr.15, 1908.
<b>PIG IRON, Per Gross Ton:</b>				
Foundry, No. 2 standard, Philadelphia .....	\$16.25	\$16.25	\$16.25	\$17.75
Foundry No. 2, Southern, Cincinnati .....	14.25	14.25	14.75	15.25
Foundry, No. 2 local, Chicago ..	16.50	16.50	16.50	17.70*
Basic, delivered, Eastern Pa. ....	15.00	15.00	15.50	17.25
Basic, Valley furnace .....	14.00	14.25	15.00	15.50
Bessemer, Pittsburgh .....	15.90	15.90	16.40	17.65
Gray forge, Pittsburgh .....	14.40	14.40	14.40	15.40
Lake Superior charcoal, Chicago	19.50	19.50	19.50	20.50

<b>BILLETS, &amp;c., Per Gross Ton:</b>				
Steel billets, Pittsburgh .....	23.00	23.00	23.00	28.00
Forging billets, Pittsburgh .....	25.00	25.00	25.00	30.00
Open hearth billets, Philadelphia	25.40	25.40	25.40	29.20
Wire rods, Pittsburgh .....	29.00	33.00	33.00	35.00
Steel rails, heavy, at mill .....	28.00	28.00	28.00	28.00

<b>OLD MATERIAL, Per Gross Ton:</b>				
Steel rails, melting, Chicago .....	13.00	13.00	13.00	12.00
Steel rails, melting, Philadelphia	13.00	13.25	13.50	12.75
Iron rails, Chicago .....	16.00	15.75	17.25	15.00
Iron rails, Philadelphia .....	17.00	17.00	17.00	17.00
Car wheels, Chicago .....	14.50	14.50	14.75	13.00
Car wheels, Philadelphia .....	14.00	14.00	14.00	14.00
Heavy steel scrap, Pittsburgh ..	14.00	14.00	14.00	12.75
Heavy steel scrap, Chicago .....	12.25	12.25	12.00	11.00
Heavy steel scrap, Philadelphia	13.00	13.25	13.50	12.75

<b>FINISHED IRON AND STEEL, Per Pound:</b>				
Refined iron bars, Philadelphia	1.37	1.37	1.37	1.50
Common iron bars, Chicago .....	1.30	1.32½	1.40	1.65
Common iron bars, Pittsburgh ..	1.30	1.30	1.40	1.50
Steel bars, tidewater, New York	1.31	1.36	1.36	1.76
Steel bars, Pittsburgh .....	1.15	1.20	1.20	1.60
Tank plates, tidewater, New York	1.46	1.46	1.46	1.86
Tank plates, Pittsburgh .....	1.30	1.30	1.30	1.70
Beams, tidewater, New York .....	1.46	1.46	1.46	1.86
Beams, Pittsburgh .....	1.30	1.30	1.30	1.70
Angles, tidewater, New York ..	1.46	1.46	1.46	1.86
Angles, Pittsburgh .....	1.30	1.30	1.30	1.70
Skelp, grooved steel, Pittsburgh	1.25	1.25	1.25	1.70
Skelp, sheared steel, Pittsburgh	1.35	1.35	1.35	1.80

<b>SHEETS, NAILS AND WIRE, Per Pound:</b>				
Sheets, black, No. 28, Pittsburgh	2.20	2.20	2.20	2.50
Wire nails, Pittsburgh .....	1.90	1.95	1.95	2.05
Cut nails, Pittsburgh .....	1.80	1.80	1.80	1.90
Barb wire, galv., Pittsburgh .....	2.35	2.40	2.40	2.50

<b>METALS, Per Pound:</b>				
Lake copper, New York .....	13.00	13.00	12.75	13.00
Electrolytic copper, New York ..	12.75	12.50	12.25	12.75
Spelter, New York .....	4.85	4.82½	4.80	4.65
Spelter, St. Louis .....	4.77½	4.67½	4.65	4.50
Lead, New York .....	4.15	4.12½	4.02½	4.00
Lead, St. Louis .....	4.10	4.00	3.87½	3.85
Tin, New York .....	29.35	29.25	28.50	32.00
Antimony, Hallett, New York ..	7.75	7.75	7.75	8.75
Nickel, New York .....	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York .....	\$3.64	\$3.64	\$3.64	\$3.89

\* This quotation has been changed for uniformity from price at furnace to delivered price at foundries, adding 35c. for switching charges.

## Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rate from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural steels and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Structural Shapes.**—I-beams and channels, 3 to 15 in., inclusive, 1.30c., net; I-beams over 15 in., 1.40c., net; H-beams over 8 in., 1.50c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.30c., net; angles, over 6 in., 1.40c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, steel bar card; tees, 3 in. and up, 1.30c., net; zeos, 3 in. and up, 1.30c., net; angles, channels and tees, under 3 in., 1.20c., base, half extras, steel bar card; deck beams and bulb angles, 1.60c., net; hand rail tees, 2.70c., net; checkered and corrugated plates, 2.70c., net.

**Plates.**—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.30c., base. Extras over this price are as follows:

Tank, ship and bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.



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Foundry, No. 2 standard, Philadelphia	\$16.25	\$16.25	\$16.25	\$17.75
Foundry No. 2, Southern, Cincinnati	14.25	14.25	14.75	15.25
Foundry, No. 2 local, Chicago	16.50	16.50	16.50	17.70*
Basic, delivered, Eastern Pa.	15.00	15.00	15.50	17.25
Basic, Valley furnace	14.00	14.25	15.00	15.50
Bessemer, Pittsburgh	15.90	15.90	16.40	17.65
Gray forge, Pittsburgh	14.40	14.40	14.40	15.40
Lake Superior charcoal, Chicago	19.50	19.50	19.50	20.50

### BILLETS, &c., Per Gross Ton:

Steel billets, Pittsburgh	23.00	23.00	23.00	28.00
Forging billets, Pittsburgh	25.00	25.00	25.00	30.00
Open hearth billets, Philadelphia	25.40	25.40	25.40	29.20
Wire rods, Pittsburgh	29.00	33.00	33.00	35.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00

### OLD MATERIAL, Per Gross Ton:

Steel rails, melting, Chicago	13.00	13.00	13.00	12.00
Steel rails, melting, Philadelphia	13.00	13.25	13.50	12.75
Iron rails, Chicago	16.00	15.75	17.25	15.00
Iron rails, Philadelphia	17.00	17.00	17.00	17.00
Car wheels, Chicago	14.50	14.50	14.75	13.00
Car wheels, Philadelphia	14.00	14.00	14.00	14.00
Heavy steel scrap, Pittsburgh	14.00	14.00	14.00	12.75
Heavy steel scrap, Chicago	12.25	12.25	12.00	11.00
Heavy steel scrap, Philadelphia	13.00	13.25	13.50	12.75

### FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	1.37	1.37	1.37	1.50
Common iron bars, Chicago	1.30	1.32½	1.40	1.65
Common iron bars, Pittsburgh	1.30	1.30	1.40	1.50
Steel bars, tidewater, New York	1.31	1.36	1.36	1.76
Steel bars, Pittsburgh	1.15	1.20	1.20	1.60
Tank plates, tidewater, New York	1.46	1.46	1.46	1.86
Tank plates, Pittsburgh	1.30	1.30	1.30	1.70
Beams, tidewater, New York	1.46	1.46	1.46	1.86
Beams, Pittsburgh	1.30	1.30	1.30	1.70
Angles, tidewater, New York	1.46	1.46	1.46	1.86
Angles, Pittsburgh	1.30	1.30	1.30	1.70
Skelp, grooved steel, Pittsburgh	1.25	1.25	1.25	1.70
Skelp, sheared steel, Pittsburgh	1.35	1.35	1.35	1.80

### SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.20	2.20	2.20	2.50
Wire nails, Pittsburgh	1.90	1.95	1.95	2.05
Cut nails, Pittsburgh	1.80	1.80	1.80	1.90
Barb wire, galv., Pittsburgh	2.35	2.40	2.40	2.50

### METALS, Per Pound:

	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	13.00	13.00	12.75	13.00
Electrolytic copper, New York	12.75	12.50	12.25	12.75
Spelter, New York	4.85	4.82½	4.80	4.65
Spelter, St. Louis	4.77½	4.67½	4.65	4.50
Lead, New York	4.15	4.12½	4.02½	4.00
Lead, St. Louis	4.10	4.00	3.87½	3.85
Tin, New York	29.35	29.25	28.50	32.00
Antimony, Hallett, New York	7.75	7.75	7.75	8.75
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	\$3.64	\$3.64	\$3.64	\$3.89

\* This quotation has been changed for uniformity from price at furnace to delivered price at foundries, adding 35c. for switching charges.

## Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rate from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural steels and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Structural Shapes.**—I-beams and channels, 3 to 15 in., inclusive, 1.30c., net; I-beams over 15 in., 1.40c., net; H-beams over 8 in., 1.50c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.30c., net; angles, over 6 in., 1.40c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.50c., base, half extras, steel bar card; tees, 3 in. and up, 1.30c., net; zees, 3 in. and up, 1.30c., net; angles, channels and tees, under 3 in., 1.20c., base, half extras, steel bar card; deck beams and bulb angles, 1.60c., net; hand rail tees, 2.70c., net; checkered and corrugated plates, 2.70c., net.

**Plates.**—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.30c., base. Extras over this price are as follows:

Tank, ship and bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.



Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered  $\frac{1}{4}$ -in. plate. Steel plates over 72 in. wide must be ordered  $\frac{1}{4}$ -in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under  $\frac{1}{4}$ -in. to and including 3-16-in. plates

on thin edges.....\$0.10

Gauges under 3-16-in. to and including No. 8..... .15

Gauges under No. 8 to and including No. 9..... .25

All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)..... .10

Complete circles..... .20

Boiler and flange steel plates..... .10

"A. B. M. A." and ordinary firebox steel plates..... .20

Still bottom steel..... .30

Marine steel..... .40

Locomotive firebox steel..... .50

Shell grade of steel is abandoned.

For widths over 100 in. up to 110 in..... .05

For widths over 110 in. up to 115 in..... .10

For widths over 115 in. up to 120 in..... .15

For widths over 120 in. up to 125 in..... .25

For widths over 125 in. up to 130 in..... .50

For widths over 130 in..... 1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.30c., f.o.b. Pittsburgh.

**Sheets.**—Minimum prices for mill shipments on sheets in carloads and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Blue annealed sheets, No. 10 and heavier, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 2.05c. Box annealed sheets, Nos. 17 to 21, 2c.; Nos. 22 to 24, 2.05c.; Nos. 25 and 26, 2.10c.; No. 27, 2.15c.; No. 28, 2.20c.; No. 29, 2.25c.; No. 30, 2.35c. Galvanized sheets, Nos. 13 and 14, 2.30c.; Nos. 15 and 16, 2.40c.; Nos. 17 to 21, 2.50c.; Nos. 22 to 24, 2.65c.; Nos. 25 and 26, 2.85c.; No. 27, 3.05c.; No. 28, 3.25c.; No. 29, 3.35c.; No. 30, 3.60c. Painted roofing sheets, No. 28, 1.55c. per square. Galvanized roofing sheets, No. 28, 2.80c. per square for  $2\frac{1}{2}$ -in. corrugations.

**Wrought Pipe.**—Discounts on steel pipe,  $\frac{3}{4}$  to 6 in., in carloads to the general trade, are 80 and 5 per cent. off list, and on iron pipe,  $\frac{3}{4}$  to 6 in., are 77 per cent. off list, while to the largest jobbers one point on the base and 5 per cent. differential additional are allowed. Regular discounts to jobbers in carloads, to which 1 per cent. on the base and 5 per cent. differential are allowed to the large trade, are as follows:

	Steel merchant pipe.		Genuine iron pipe.	
	Black.	Galv.	Black.	Galv.
$\frac{3}{4}$ to $\frac{1}{2}$ in.....	72	56	60	53
$\frac{1}{2}$ in.....	74	59	70	56
$\frac{3}{4}$ in.....	76	64	73	61
$\frac{1}{2}$ to 6 in.....	80	70	77	67
7 to 12 in.*.....	75	60	72	57
Extra strong, plain ends:				
$\frac{3}{4}$ to $\frac{1}{2}$ in.....	65	53	62	50
$\frac{1}{2}$ to 4 in.....	72	60	69	57
$\frac{3}{4}$ to 8 in.....	68	56	65	53
Double extra strong, plain ends:				
$\frac{1}{2}$ to 8 in.....	61	50	58	47

\* Iron prices are for 7 to 8 in.

**Boiler Tubes.**—Regular discounts are as follows:

	Boiler Tubes.	Steel.
1 to $1\frac{1}{2}$ in.....	.....	50
$1\frac{1}{2}$ to $2\frac{1}{2}$ in.....	.....	62
$2\frac{1}{2}$ to 5 in.....	.....	70
$2\frac{1}{2}$ in.....	.....	64
6 to 13 in.....	.....	62
$2\frac{1}{2}$ in. and smaller, over 18 ft. long, 10 per cent. net extra.		
$2\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra.		

**Wire Rods.**—Bessemer rods, \$29; chain rods, \$29; basic rods, \$30.

## Chicago.

FISHER BUILDING, April 14, 1909.—(By Telegraph.)

Despite the exaggerated rumors of price cutting, disquieting tariff talk and other disturbing influences, business in iron and steel is slowly expanding in accordance with the growing demands of consumption. Prices of finished material have not yet reached a level of unyielding firmness, but the mills seem less inclined to fill up with low priced contracts for extended future delivery. At the same time orders for steel bars are being entered for delivery through the second half, though buying for this period has not assumed the form of a general movement so far as the implement interests are concerned. Favorable reports of crop conditions lend strength to the general industrial situation. The implement makers, whose factories are now running full, are especially hopeful of a prosperous business through the last half of the year and are more willing than any other class of consumers to prepare for the future by placing liberal forward orders. They are especially prominent in the pig iron market, which last week developed more activity than has been seen since the post election spurt last November. Convinced by the continued refusal of the furnace interests to consider offers to buy below \$11, Birmingham, consumers began to place orders for second half require-

ments, and the movement thus started is still actively in force. Another feature of market interest which is favorably suggestive is the firmer tone observed in iron and steel scrap, for which there is a better demand from consumers. Altogether there is a good deal of hopeful significance in current events, and sentiment is veering away from the attitude of pessimistic doubt toward the better feeling of confidence.

**Pig Iron.**—After a vigorous but unsuccessful effort on the part of consumers to force the market below \$11, Birmingham, for second half iron, a general buying movement which started a week or 10 days ago has resulted in the placing of considerable tonnage, principally for second and third quarter delivery. It is estimated that between 50,000 and 60,000 tons has been entered by sellers in this market which seems to be the center of activity in the buying movement. While the iron bought was widely distributed, the bulk of it went to the agricultural implement makers. Practically all of the Southern iron sold was taken by the two leading Alabama interests at \$11, Birmingham, for No. 2 foundry. One of these sellers has since withdrawn this price, and is now quoting \$11.50 and restricting this figure to business not extending beyond third quarter. This leaves the leading interest the only one now quoting \$11 through the entire second half. Neither the Woodward nor Sloss companies participated in the selling, both declining to book ahead at the minimum prices. As indicative of the general character of the buying, it is stated that the size of individual orders ranged from a few hundred to 1000 tons, the 3000 tons taken by the Allis-Chalmers Company being among the largest orders placed by any one interest. A leading implement company is credited with the purchase of part of the iron sold on account of the Bay View furnaces. Respecting sales reported to have been made in the Milwaukee District at \$10.50, while it is admitted that iron was sold at this price, it is vigorously denied that the grades involved could be classed as No. 2 foundry. In comparing the orders placed by various consumers with known normal requirements, it appears that the buying has been on a very conservative basis throughout. There are a large number of inquiries still in the market, which represent an aggregate of considerable size likely to be placed within the next few days. Whether or not better than \$11 may have been made in a specific case or two, it is none the less true that this figure represents the bottom of the market. The events of the past week have undoubtedly established a firmer feeling. The following quotations are for April, May and June delivery, f.o.b. Chicago:

Lake Superior charcoal.....	\$19.50 to \$20.00
Northern coke foundry, No. 1.....	17.00 to 17.50
Northern coke foundry, No. 2.....	16.50 to 17.00
Northern coke foundry, No. 3.....	16.00 to 16.50
Northern Scotch, No. 1.....	17.50 to 18.00
Southern coke, No. 1.....	15.85 to 16.35
Southern coke, No. 2.....	15.35 to 15.85
Southern coke, No. 3.....	14.85 to 15.35
Southern coke, No. 4.....	14.35 to 14.85
Southern coke, No. 1 soft.....	15.85 to 16.35
Southern coke, No. 2 soft.....	15.35 to 15.85
Southern gray forge.....	13.85 to 14.35
Southern mottled.....	13.60 to 14.10
Malleable Bessemer.....	16.50 to 17.00
Standard Bessemer.....	17.90 to 18.40
Jackson Co. and Kentucky silvery, 6 %.....	19.90 to 20.40
Jackson Co. and Kentucky silvery, 8 %.....	20.90 to 21.40
Jackson Co. and Kentucky silvery, 10 %.....	22.90 to 23.40

(By Mail.)

**Billets and Rods.**—The demand for forging billets continues light, with only occasional small orders coming out. Of these two are reported to have been taken at \$28, one of them being for 50 tons. Another seller reports a sale of a small lot at \$27, Chicago.

**Rails and Track Supplies.**—Outside of some small orders amounting to a few hundred tons, no new rail orders have been booked, although several fair sized inquiries are reported. It is said that the Chicago Great Western has plans for extended improvements under consideration which may bring it into the market for a considerable amount of material. Such material as the railroads are ordering and specifying is almost uniformly for prompt shipment. This is especially true of fastenings, indicating that store supplies of this character are extremely limited. No improvement is noted in light rails, which are held at \$24 for 25 lb. to 45 lb. sections, this price being subject to some shading.

**Structural Material.**—Notwithstanding the low level of current prices on fabricated material, buyers are proceeding leisurely in placing contracts. Few of the deals noted in last report as pending have concluded, and the new inquiries that have come to light include nothing of important size. Among those received during the week are 250 tons from the Chicago, Rock Island & Pacific Railroad, on which bids have gone in, and 400 tons for the Blackhawk Building, Waterloo, Iowa. The Kearns Building, Salt Lake City, calling for 2200 tons, has been formally awarded to the Modern Steel Construction Company, Waukesha, Wis. Letting of the 2000 tons required for the Smart Building, Kansas City, Mo., has been deferred, pending the consideration of alternative bids on reinforced concrete construction. Current reports credit Wells Brothers with having secured the general

contract for the Steger Building, for which 2000 tons are specified, but this is not definitely confirmed. Railroads are specifying liberally against contracts, which, it is claimed, are limited to deliveries within four months at the outside. Rumors of price concessions on plain material are plentiful. While it is doubtless true that there is more or less cutting on material included in specifications for specific contracts, 1.45c., Chicago, is regarded as fairly representative of the market price on current requirements. Store prices on structural shapes, base sizes, are now quoted 1.60c. to 1.70c. Indications point to some laxity in the maintenance of regular freight differentials in certain territory.

**Plates.**—New business and specifications are steadily, if not rapidly, growing in size. Owing to the larger proportion of business emanating from structural work of various kinds, the demand for universal plates is relatively better than for sheared plates. In no division of the market are mill prices less open to question than in plates, on which 1.45c. Chicago is being generally well maintained. None of the mills handicapped by a freight differential above that applying to the Pittsburgh District seems disposed to cut under this price. This condition, however, does not extend to store shipments, on which prices have sagged to a basis of 1.60c. for plates of  $\frac{1}{4}$ -in. and heavier up to and including 72 in. wide; quotations, therefore, range from 1.60c. to 1.70c. Chicago.

**Sheets.**—Sheets continue in fairly good demand. Both manufacturers and jobbers are buying conservatively, but the aggregate volume of business is slowly increasing. The sheet department of the Indiana Harbor mill is running full. Store trade is fairly active, the demand centering principally upon galvanized and light black sheets. With the exception of some shading resulting from the eagerness of competition, sheet prices are being fairly evenly held.

**Bars.**—Mill interests, while booking some steel bar contracts extending through the second half, are not pressing for such business. Orders, as a rule, are being entered for delivery beyond July 1 only when insisted upon by intimate customers; in other words, the mills are disinclined to book through the remainder of the year at the low prices that have been established, preferring to limit contracts to the first half. The implement makers are specifying for their current wants without hesitation, but from now on until work for the new season begins the volume of such business will depend a good deal on the amount of second orders received by manufacturers. The implement makers report that these are coming out freely, and prospects are that they will equal, if not exceed, the usual average. Steel bar prices have developed some irregularity, as is evident from the fact that 1.15c., Pittsburgh, has been done on contracts for delivery up to January 1. On current business and for shipments prior to July 1 the market is quotable at 1.33c. to 1.35c., Chicago. The spread between mill and store prices on steel bars has been narrowed by a quotation made by a leading interest of 1.50c., from store. Some fair sized contracts for iron bars covering the requirements through the present year have been offered, but the mills have declined to accept them at the present market, which for the ordinary run of prompt orders is from 1.30c. to 1.32 $\frac{1}{2}$ c., Chicago. The railroads, who are the largest users of bar iron, are buying sparingly.

**Merchant Pipe.**—Business is picking up a little, but the demand is by no means what it should be at this season of the year. Inquiries, which have been more numerous of late, probably represent increasing wants which must be supplied in the near future. Thus far there has been no complaint of irregularity in the maintenance of prices.

**Boiler Tubes.**—A slightly better movement in merchant tubes is reported, due principally to more liberal orders from the large boiler shops. The improvement observed, however, is noteworthy only because of the extreme dullness which has for months characterized this market.

**Merchant Steel.**—The demand is comparatively light and specifications have fallen off somewhat in the last week or two. Some buyers have been seeking to place new contracts running through the rest of the year, but very little business of this kind has been taken by the mills, who prefer not to sell beyond July 1.

**Cast Iron Pipe.**—The closing of the Cheyenne contract for 10,372 tons of 16, 20 and 30 in. pipe, which was taken by the United States Cast Iron Pipe & Foundry Company, was the leading event in last week's market. The same interest is the low bidder on 600 tons of 60-in. intake pipe for the city of Toledo, Ohio, but the use of riveted steel pipe is being considered for this job, and no award has as yet been made. There are several other inquiries for small lots in the market, which will probably be placed in the near future. We quote per net ton, Chicago, as follows: Water pipe, 4 in., \$27.50; 6 to 12 in., \$26.50; 16 in. and up, \$24.50, with \$1 extra for gas pipe.

**Metals.**—There is a fairly active demand for copper. In addition to the regular run of orders for current requirements, consumers are buying somewhat more freely for their anticipated needs 90 days ahead, and would probably be

willing to extend their contracts beyond this time at present prices if sellers were inclined to accept such business. There is a growing impression among the trade that any further recession in the price of copper is hardly to be expected. Lead is dull and stationary, and there is but little demand for spelter. Tin, while practically unchanged, exhibits a firmer tendency. Old metals are moving a little more freely, but the improvement is not pronounced enough to have an appreciable effect on prices. Quotations are as follows: Casting copper, 12 $\frac{1}{4}$ c. to 13c.; lake, 13 $\frac{1}{4}$ c. to 13 $\frac{1}{2}$ c., in car lots, for prompt shipment; small lots,  $\frac{1}{4}$ c. to  $\frac{3}{4}$ c. higher; pig tin, car lots, 31c.; small lots, 33c.; lead, desilverized, 4.05c. to 4.15c., for 50-ton lots; corroding, 4.30c. to 4.40c., for 50-ton lots; in car lots, 2 $\frac{1}{4}$ c. per 100 lb. higher; spelter, 5c. to 5.10c.; Cookson's antimony, 10 $\frac{1}{2}$ c., and other grades, 9 $\frac{1}{4}$ c. to 10 $\frac{1}{4}$ c.; sheet zinc is \$6.75, f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13c.; copper bottoms, 11 $\frac{1}{4}$ c.; copper clips, 11c.; red brass, 11 $\frac{1}{4}$ c.; yellow brass, 9c.; light brass, 7c.; lead pipe, 3.75c.; zinc, 2 $\frac{1}{4}$ c.; pewter, No. 1, 21c.; tin foil, 23c.; block tin pipe, 26c.

**Old Material.**—For the first time in several weeks old material begins to show some signs of recovery, as a result of which a more optimistic feeling prevails. The demand for steel scrap is growing, and several large consumers are quietly buying with a view to increasing their holdings as fast as possible without forcing the market. One lot of 2000 tons of heavy melting steel changed hands at \$12.50. It is reported that practically all of the list recently offered by the Great Northern was purchased by dealers and stored in St. Paul for future distribution. Dealers generally are not disposed to sell short on the present market, believing that an upturn in prices is imminent. The demand from all sources is considerably improved, and is easily absorbing all of the limited tonnage being offered by the railroads. Iron grades, which have for some time been extremely sluggish, are in better demand, and minimum prices on the leading lines are no longer available. The following prices are per gross ton, f.o.b. Chicago:

Old iron rails.....	\$16.00 to \$16.50
Old steel rails, rerolling.....	13.25 to 13.75
Old steel rails, less than 3 ft.....	13.00 to 13.50
Relaying rails, standard sections, subject to inspection.....	22.50 to 23.50
Old car wheels.....	14.50 to 15.00
Heavy melting steel scrap.....	12.25 to 12.75
Frogs, switches and guards, cut apart.....	12.50 to 13.00
Mixed steel.....	10.50 to 11.00

The following quotations are per net ton:

Iron fish plates.....	\$14.50 to \$15.00
Iron car axles.....	17.00 to 17.50
Steel car axles.....	15.75 to 16.25
No. 1 railroad wrought.....	12.00 to 12.50
No. 2 railroad wrought.....	11.50 to 12.00
Springs, knuckles and couplers.....	11.75 to 12.25
Locomotive tires, smooth.....	13.00 to 13.50
No. 1 dealers' forge.....	9.00 to 9.50
Mixed bushing.....	7.00 to 7.50
Iron axle turnings.....	7.00 to 7.50
Soft steel axle turnings.....	6.50 to 7.00
Machine shop turnings.....	6.50 to 7.00
Cast borings.....	5.25 to 5.75
Mixed borings, &c.....	5.25 to 5.75
No. 1 mill.....	7.00 to 7.50
No. 2 mill.....	6.00 to 6.50
No. 1 boilers, cut to sheets and rings.....	8.00 to 8.50
No. 1 cast scrap.....	12.25 to 12.75
Stove plate and light cast scrap.....	11.25 to 11.75
Railroad malleable.....	11.00 to 11.50
Agricultural malleable.....	10.00 to 10.50
Pipes and flues.....	8.50 to 9.00

## Buffalo.

BUFFALO, N. Y., April 13, 1909.

**Pig Iron.**—A little more activity has been apparent during the past few days both in inquiries and orders, as compared with the sluggishness and lack of interest prevailing for some time, and furnacemen are regarding the situation with greater cheerfulness. The improvement in inquiry is for both present quarter and second half deliveries, but furnacemen are holding off as much as possible on second half. There has been no quotable change in prices since last week, which are as follows for present quarter deliveries, f.o.b. Buffalo:

No. 1 X foundry.....	\$15.75 to \$16.00
No. 2 X foundry.....	15.25 to 15.50
No. 2 plain.....	15.00 to 15.25
No. 3 foundry.....	15.00 to 15.15
Gray forge.....	14.75 to 15.00
Malleable Bessemer.....	15.25 to 16.00
Basic.....	15.25 to 15.50
Charcoal.....	20.00 to 20.50

**Finished Iron and Steel.**—The volume of business in bars and plates shows continued improvement, orders being for larger quantities than for the preceding week or two, and at less concession from regular quotations than has of late been demanded. Specifications on contracts are also coming along in fairly good volume. In structural material the inquiry continues active, with considerable new business coming out. The Jones & Laughlin Steel Company received the contract for the steel in the Crosby Company's plant addition, this city, about 200 tons, and the American Bridge



Company for the German Insurance Building, Rochester, 200 tons. Chas. F. Ernst Sons Iron Works received the contract for steel for the Automatic Transportation Company's manufacturing plant, Buffalo. Bids will be received in about two weeks by the Erie Railroad, Chas. H. Moore, grade crossing engineer, New York City, for eight plate girder bridges over subways in Bailey avenue and William street, Buffalo, aggregating 1700 tons.

**Old Material.**—There is little life in the market, although there has been a slight increase in buying on the part of consumers, whose stocks have become reduced in some lines, and where shaded prices could be obtained. The nominal schedule has not changed from last week. Dealers are bidding freely for storage for the future market on the large lists sent out by the Pennsylvania and the Delaware, Lackawanna & Western railroads, to be closed this week. We quote as follows per gross ton, f.o.b. Buffalo:

Heavy melting steel scrap.....	\$13.75 to \$14.25
Low phosphorus steel scrap.....	18.00 to 18.75
No. 1 railroad wrought.....	13.50 to 14.00
No. 1 railroad and machinery cast scrap.....	13.75 to 14.25
Old steel axles.....	14.50 to 15.25
Old iron axles.....	17.50 to 18.00
Old car wheels.....	14.00 to 14.75
Railroad malleable.....	12.50 to 13.00
Boiler plate.....	11.00 to 11.50
Locomotive grate bars.....	11.50 to 12.00
Pipe.....	10.50 to 11.00
Wrought iron and soft steel turnings.....	7.00 to 7.50
Clean cast iron borings.....	6.00 to 6.50
No. 1 busheling scrap.....	12.25 to 12.75

## Philadelphia.

PHILADELPHIA, PA., April 12, 1909.

The demand for structural material and plates continues fair; several large propositions under consideration in this territory are still unclosed, while one or two new ones have developed, the most important being that of the Philadelphia & Reading Railroad for further work on its elevated structure in this city. There has been more pig iron buying, particularly by the cast iron pipe interests, and more inquiry is noted on the part of the general foundry trade, both for early and forward delivery. The general situation, however, is still of a waiting character, and the trade hardly expects much business activity until after the final passage of the tariff bill.

**Pig Iron.**—The most important transactions have been in low grade foundry irons. The cast iron pipe makers have purchased 7500 tons of Northern iron at prices understood to have been under \$15, delivered, for April and May shipment. Virginia pipe makers also purchased 4000 tons of Virginia low grade iron. Some of the Northern pipe makers are still in the market and have inquiries out for about 8000 tons, a large portion of which is Southern. Outside of these sales transactions have been rather moderate. One sale of 500 tons of No. 2X foundry is reported, at the market, but the bulk of the business has been in small prompt lots, at prices ranging from \$16.25 to \$16.50, delivered. There has been a little more general inquiry both for early and future delivery, one for 1500 tons of foundry iron for the last half of the year being reported, but sellers display no interest in forward business, and a number refuse to quote for such delivery. In fact, some sellers show but little interest in the market at its present level of prices for any delivery, contending that at the present costs they are unable to get a new dollar back for an old one. There has been a scattered sale of Virginia foundry iron, mostly small lots for prompt delivery, prices for which are being pretty well maintained. The demand for forge iron is light, as rolling mills are operating irregularly and their requirements under existing conditions are not extensive. The steel making grades still show no movement. Melters are more interested in restricting deliveries than in taking on any fresh contracts. At the present rate of production, stocks in this territory will no doubt soon begin to show a material accumulation. So far the increase has been comparatively small, owing to deliveries on old contracts, but it is understood that even the consumers of foundry iron are not taking deliveries as freely as they were. No further curtailment of production has yet been made, owing to the fact that stocks on hand have been extremely light and that some little accumulation will be permitted before stacks are blown out. Prices show practically no change, basic and low phosphorus being nominally quoted, while those for moderate lots of the other standard grades for shipment during the next three months range about as follows for delivery in buyers' yards, eastern Pennsylvania and nearby territory, but for large quantities these prices could no doubt be slightly shaded:

Eastern Pennsylvania, No. 2 X foundry.....	\$16.25 to \$16.50
Eastern Pennsylvania, No. 2 plain.....	15.75 to 16.00
Virginia, No. 2 X foundry.....	16.75
Virginia, No. 2 plain.....	16.25 to 16.50
Gray forge.....	15.00 to 15.25
Basic.....	15.00 to 15.25
Low phosphorus.....	21.00

**Ferromanganese.**—Business is at a standstill. In the absence of demand, the quotation is nominally \$42 Balti-

more, but this price could be shaded for a desirable quantity.

**Billets.**—The large buyers do not come into the market, and what small prompt orders have been taken have been on the basis of \$25.40 delivered for ordinary rolling steel. Little has been done in forging steel, which commands the usual \$2 per ton advance, the customary extras applying.

**Plates.**—There is a fairly good run of small orders for bridge, locomotive and tank material, which in the aggregate make quite a respectable showing. Eastern mills hold prices pretty firmly, and it is only when a particularly desirable order comes out that any concession can be had. Inquiries for several good sized lots which have been held in abeyance show signs of developing into business, and the trade takes a somewhat more hopeful view of the situation. For delivery in this territory moderate lots still command 1.45c. to 1.55c., the usual extras applying.

**Structural Material.**—The specifications for another section of the elevated work of the Philadelphia & Reading Railroad, in this city, have now been sent out for bids, which will be received until May 11. The estimates for structural material show that about 17,000 tons will be required for the work proposed. Bids are also being asked for an addition to the Bellevue-Stratford Hotel, requiring about 1000 tons, while several smaller propositions are being considered. The Curtis Building contract is still being held in abeyance, as are also a number of smaller contracts. On plain material prices continue unchanged, but on fabricated work it is understood that quite low figures continue to be named. For delivery in this territory plain shapes are quoted at 1.45c. to 1.55c., according to specification.

**Sheets.**—The demand continues irregular, and mills show no gain in bookings. Transactions are confined to small lots for prompt shipment, and mills are largely operating on day to day orders. For prompt deliveries in this territory the following range of quotations is named: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c.; No. 28, 2.80c.

**Bars.**—Very little business comes out, buyers taking only small lots for immediate consumption. Many mills will not enter orders for extended deliveries at the present level of quotations. While there has been no recession in prices, quotations vary considerably, dependent largely on specification and tonnage. For delivery in this vicinity refined iron bars are quoted at 1.37c. to 1.47c.; common bars, 1.28c. to 1.35c.; steel bars, 1.35c. to 1.40c.

**Coke.**—More firmness in quotations for extended delivery is shown, particularly for foundry coke, although the demand is still irregular and small in volume. For prompt shipments, however, prices are still weak. Little business has been done recently, either in foundry or furnace coke. The following range of quotations is named for deliveries in this vicinity:

Connellsville furnace coke.....	\$3.75 to \$3.90
Foundry coke.....	4.15 to 4.40
Mountain furnace coke.....	3.35 to 3.50
Foundry coke.....	3.75 to 4.00

**Old Material.**—Transactions have been in small lots only, but there is a more cheerful feeling, and the market is a shade stronger, particularly for borings, turnings and stove plate. The monthly offerings of the Philadelphia & Reading Railroad and the Central Railroad of New Jersey have, it is understood, been absorbed at fairly good prices, but those of the other roads have not yet been disposed of. Quotations, while still nominal to a large extent, range about as follows for delivery in buyers' yards, Philadelphia and nearby points:

No. 1 steel scrap and crops.....	\$13.00 to \$13.50
Low phosphorus.....	17.00 to 18.00
Old steel axles.....	17.00 to 17.50
Old iron axles.....	18.00 to 19.00
Old iron rails.....	17.00 to 17.50
Old car wheels.....	14.00 to 15.00
Choice No. 1 R. R. wrought.....	15.00 to 16.50
Machinery cast.....	14.00 to 14.50
Railroad malleable.....	13.00 to 13.50
Wrought iron pipe.....	13.00 to 13.50
No. 1 forge fire scrap.....	12.00 to 12.50
No. 2 light iron.....	8.50 to 9.00
Wrought turnings.....	10.00 to 10.50
Stove plate.....	11.75 to 12.25
Cast borings.....	8.75 to 9.25
Grate bars.....	11.50 to 12.00

## Birmingham.

BIRMINGHAM, ALA., April 12, 1909.

**Pig Iron.**—The transactions recorded in this market in the past week involved an aggregate of some 50,000 tons. Any departures from the schedule of \$11, Birmingham, for No. 2 foundry in order to effect the sales reported is believed to have been immaterial, and the attitude now being manifested by the producing interests is such as to quite remove the likelihood of shading their asking prices. One of the leading concerns has adopted a quotation of \$11.50, Birmingham, and reports recent commitments sufficient materially to reduce accumulations on furnace yards. Another interest reports its output for the remainder of the first half disposed of and has withdrawn from the market for deliveries further

advanced by asking prohibitive prices. In still another case preparations are being made for a larger supply of raw material where a curtailment of the producing capacity has been contemplated, and a disposition to limit the \$11 schedule to third quarter deliveries is manifested. The tonnage available at \$11 subject to shipments covering the remainder of the year is considered adequate for the demand, and in view of stock accumulations it is probable that significant additions to order book requirements will be necessitated before the market is represented by a higher quotation. However, the inquiries pending at this time have come from the foundry trade more generally and are in such volume as to indicate a more satisfactory condition in all lines. It is noted that the policy of hand to mouth buying that has been adhered to for so long a time has given place to negotiations on a much larger scale, and the inclination to provide for anticipated requirements is a feature of moment.

**Cast Iron Pipe.**—The most important lettings coming up in the near future are requirements for the cities of San Diego, Cal., and Salt Lake City, Utah, which will involve some 2000 tons each and are for consideration on the 19th and 23d inst., respectively. The aggregate of small orders from the Middle West is attractive, and larger contracts are expected from points along the Pacific Coast. A lot of some 2000 tons of large sized water pipe is soon to be placed for requirements in Cuba. We quote water pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$26; 8 to 12 in., \$25; over 12 in., average \$24, with \$1 per ton extra for gas pipe.

**Old Material.**—No change is seen in the condition of this market, despite the strengthening of pig iron quotations. Dealers are optimistic and add to their stocks from time to time, but reports are not indicative of an improvement in the consumption or a more determined status of values. We quote nominally as follows, per gross ton, f.o.b. cars here:

Old iron rails.....	\$13.50 to \$14.00
Old iron axles.....	14.50 to 15.00
Old steel axles.....	12.00 to 12.50
No. 1 Railroad wrought.....	12.00 to 12.50
No. 2 Railroad wrought.....	10.00 to 10.50
No. 1 country wrought.....	9.00 to 9.50
No. 2 country wrought.....	8.50 to 9.00
No. 1 machinery.....	10.50 to 11.00
Tram car wheels.....	10.50 to 11.00
Standard car wheels.....	12.00 to 12.50
Stove plate and light cast.....	7.50 to 8.00
Cast borings.....	4.00 to 4.50

## St. Louis.

St. Louis, April 12, 1909.

The occurrence of the municipal election on Tuesday and the observance of Good Friday resulted in curtailing the volume of local business for the week. Railroad construction is on in earnest now for the current year in the great Southwest, a larger mileage than for several years having been arranged for. The Terminal Railroad Association proposes to build large central freight and minor freight depots in the St. Louis District, also other desirable improvements for enlarging the terminal system, involving an expenditure of \$30,000,000. Other terminal systems are forming which will require the expenditure of several millions.

**Coke.**—While there is some increase in inquiry, sales are light. A marked number of specifications on contract, however, are coming in and renewed buying is evidently close at hand. In the market price there is no change, but the tendency is toward firmness. We quote for Connellsville 72-hr. standard foundry, spot, \$2, at oven; second and third quarter, \$2.25; over one year, \$2.50. There is a better demand for smithing coke.

**Pig Iron.**—The close of the week witnessed a decided improvement in the tone of the market. This is brought about, first, by the firmer attitude of producers, and, second, by more inquiry and a disposition on the part of some large buyers to place orders for specific lots and definite delivery. Actual sales are in small lots, but the leading brokers state that they have received more specifications on contract during the week than for a month. Some parties who bought last week were unable to add to their holdings except at a small advance, as Southern furnaces are refusing to sell below \$11, Birmingham, for No. 2 foundry, and some are naming a higher figure or declining to quote except for prompt shipment. There is a quite general belief that not much \$11 iron is to be had on long time shipment and that any curtailment in production would bring about an advance. There is a disposition on the part of implement foundries to stock up, and it is reported that one of these buyers is in the market for 2000 tons. Another house reports an inquiry for 1500 tons from a local party. We quote for No. 2 Southern standard foundry \$11 to \$11.50, the lower price for prompt and the higher for shipment over the second half. More activity is confidently expected in the near future.

**Old Material.**—Owing to the development of a speculative inquiry and more disposition among dealers to operate, prices have been advanced about 50c. per ton along the entire list. This marking up of prices is owing to holders preferring to decline business on the basis of last week's figures, in

the belief that the demand from consumers will improve and change the situation from that of a dealers' market. The Cotton Belt Railroad has sold 700 tons of miscellaneous scrap. Of the large list offered by the Missouri Pacific last week, we learn that the St. Louis branch of a Chicago house bought 75 per cent. No offerings by railroads are announced for the week. The demand for relayers is still urgent, the sales of a leading dealer being 1650 tons for the week. Supplies are moderate and offerings light. We quote per gross ton, f.o.b. St. Louis, as follows:

Old iron rails.....	\$14.50 to \$15.00
Old steel rails, rerolling.....	12.50 to 13.00
Old steel rails, less than 3 ft.....	12.00 to 12.50
Relaying rails, standard sections, sub-	
ject to inspection.....	23.50 to 24.00
Old car wheels.....	13.00 to 13.50
Heavy melting steel scrap.....	12.00 to 12.50
Frogs, switches and guards, cut apart.....	12.00 to 12.50

The following quotations are per net ton:

Iron flat plates.....	\$13.00 to \$13.50
Iron car axles.....	16.50 to 17.00
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	10.50 to 11.00
Railway springs.....	10.00 to 10.50
Locomotive tires, smooth.....	11.50 to 12.00
No. 1 dealers' forge.....	9.00 to 9.50
Mixed borings.....	4.50 to 5.00
No. 1 boilers, cut to sheets and rings.....	7.50 to 8.00
No. 1 cast scrap.....	10.50 to 11.00
Stove pipe and light cast scrap.....	8.00 to 8.50
Railroad malleable.....	8.50 to 9.00
Agricultural malleable.....	8.00 to 8.50
Pipes and flues.....	8.00 to 8.50
Railroad sheet scrap.....	7.50 to 8.00
Railroad grate bars.....	8.50 to 9.00
Machine shop turnings.....	7.00 to 7.50

**Lead, Spelter, Etc.**—There is a good demand for lead and the market is firm at 4.05c. to 4.10c. Lead ore is held at \$27 per 1000 lb., base. For spelter there is a moderate sale at 4.65c. Zinc ore is quoted at \$37.50 per ton, Joplin. Tin is 10c. per 100 lb. higher; antimony unchanged from last week, with copper also ruling at previous prices. At the close the demand for metals has improved.

The National Enameling & Stamping Company is hastening the completion of two large brick fireproof buildings at its plant at Granite City, to be used for the manufacture of Brilliantine enamel ware.

Louis A. Cella, president of the Southern Real Estate & Financial Company, owner of the American Hotel, announces that plans are well under way for the erection of an annex to the hotel, to cost about \$1,000,000. It is to be 12 stories high and an exact reproduction of the present hotel.

## Cincinnati.

CINCINNATI, OHIO, April 14, 1909.—(By Telegraph.)

Greater hopefulness is reflected in the utterances of leading factors in the iron and steel markets, which is based, in some instances, on actual improvement in conditions. There is a better volume of business each week on finished steel products, suggesting that the ultra conservative buyer is about satisfied that bottom levels have been reached. But the stiffening of the past few days in iron has not seemed to bring out the hesitating buyer, and with the first hardening of prices for many months the buying market is not active. Some authorities are convinced that the present forcing of prices upward by the Southern ironmasters is inimical to steady improvement, and there is danger of recessions.

**Pig Iron.**—Although the nominal range of Southern No. 2 is given as \$11 to \$11.50, Birmingham, for immediate delivery, the opportunities for \$11 iron are being rapidly eliminated under the forceful generalship of the Southern ironmasters, and \$11.50 is more frequently heard. In the North the Valley producers have taken some good tonnages in basic and at close prices, and are going after business with considerable gusto. Forge iron continues to be the leader in point of inquiry, with very little to offer, and it is quite certain that this iron would just now bring \$10.50, Birmingham. One of the largest local intercasts has had to turn down an offer on 10,000 tons at a good price because it could not get the iron. Two large steel makers in Ohio have bought basic, and the price in both instances has been about \$14, Valley furnace. One of these concerns, which wanted 3000 tons, is said to have bought from a nearby furnace; the other, which asked for 500 to 1000 tons, is said to have taken the larger amount from a Valley furnace. A prominent steel maker in central Ohio is inquiring for some basic for the last half. There is considerable inquiry for last half prices. Some furnaces are holding for \$12 for this delivery, while others are willing to take \$11.50 for delivery through the year. On Northern iron \$14, Iron-ton, is regarded by some leading interests as a fair price for delivery through the year. On the inquiry of the largest pipe interest for 2000 to 4000 tons for delivery to its Addyston plant, it is reported that Northern furnaces have taken the business, notwithstanding the fact that Southern iron could be delivered there at a lower price under the existing quoted prices of



each. One of the large furnace interests in the South, which has been accredited with making the lower prices of the past few weeks and as having gone the most aggressively after business, states through its local representative that all inquiries are now submitted, and that the agent has no authority to quote anything less than on the basis of \$11.50, Birmingham, for No. 2. For early delivery, f.o.b. Cincinnati, with freight rates of \$3.25 from Birmingham, and \$1.20 from the Hanging Rock District, we quote as follows:

Southern coke, No. 1 foundry.....	\$14.75 to \$15.25
Southern coke, No. 2 foundry.....	14.25 to 14.75
Southern coke, No. 3 foundry.....	13.75 to 14.25
Southern coke, No. 4 foundry.....	13.50 to 14.00
Southern coke, No. 1 Soft.....	14.75 to 15.25
Southern coke, No. 2 soft.....	14.25 to 14.75
Southern coke, gray forge.....	13.75
Southern mottled.....	13.25
Ohio silvery, 8 per cent. silicon.....	19.70
Lake Superior coke, No. 1.....	15.70 to 16.20
Lake Superior coke, No. 2.....	15.20 to 15.70
Lake Superior coke, No. 3.....	14.70 to 15.20
Standard Southern car wheel.....	22.25 to 23.25
Lake Superior car wheel.....	21.75 to 22.75

(By Mail.)

**Coke.**—The market is somewhat firmer on the foundry grades, but weaker on the furnace product. In fact, new business in furnace coke is practically unheard of. Connells-ville furnace grades, spot, are quotable at \$1.65 to \$1.75, at oven, and for the last three quarters \$1.75 to \$2, according to grade. Connells-ville foundry is quotable at \$2 to \$2.25 on spot business, and for delivery through the last three quarters \$2 to \$2.50. Wise County furnace grades are \$1.60 to \$1.90; foundry, \$2 to \$2.25; Pocahontas, furnace, \$1.65 to \$1.85; foundry, \$1.85 to \$2.25.

**Structural Material.**—Other lines of finished material still forge ahead in this market, although sales agencies report a better inquiry for building purposes. Prominent agents here insist that the greater part of such business as is going in structural shapes is being booked at the 1.30c. Pittsburgh rate. The opinion is expressed that a shade lower price might be secured on minimum business of 200 tons. For the Hamilton County Jail, for which drawings are just now being made, something like 1200 or 1500 tons will be required; it will be five or six months before specifications will be ready for bidders.

**Bars.**—A good volume of business is being done on steel bars, but reports indicate that current quotations are being liberally shaded. The best that seems to be done here through the larger agencies is 1.10c., Pittsburgh, and buying has been quite good from the implement makers and wagon builders, although the leading interests, which have been 30 to 60 days behind, are now prepared to deliver orders within 10 days to two weeks.

**Sheets.**—The awakening of the canning industries, which are quite prominent in this territory, is furnishing some good business to manufacturers of sheets and tin plate. Black and galvanized sheets are still having a good sale, and the market is fairly strong on the Pittsburgh basis, elsewhere quoted.

**Old Material.**—Scrap is a little steadier, and dealers are evidencing a trifle more willingness to quote, although there still exists a wide difference as to values between the leading interests. Dealers generally are buying at existing low levels, believing that there will be a steady improvement on or before the turn of the half year. The following prices, f.o.b. Cincinnati, are offered as about representative of this market:

No. 1 R. R. wrought, net ton.....	\$11.50 to \$12.50
Cast borings, net ton.....	5.50 to 6.00
Heavy melting steel scrap, gross ton...	11.50 to 12.00
Steel turnings, net ton.....	6.50 to 7.00
No. 1 cast scrap, net ton.....	10.50 to 11.00
Burnt cast, net ton.....	8.00 to 8.50
Old iron axles, net ton.....	16.00 to 16.50
Old iron rails, gross ton.....	14.00 to 15.00
Old steel rails, short, gross ton.....	11.50 to 12.00
Old steel rails, long, gross ton.....	11.50 to 12.00
Relaying rails, 56 lb. and up, gross ton...	21.00 to 21.50
Old car wheels, gross ton.....	13.50 to 14.00
Low phosphorus scrap, gross ton.....	13.00 to 13.50

## San Francisco.

SAN FRANCISCO, April 7, 1909.

Activity in the iron and steel market is becoming rather more general. Small orders are becoming more numerous, as the requirements for the immediate future are increasing with the advancing season, but few large transactions are reported. The slightly increased movement due to the reduction of prices on rolled products has been at least partially curtailed by the prospect of lower tariff duties, which would bring about a heavier movement to this port from Europe. The effect of a lower tariff, however, would be felt in this market only in connection with large orders, in which the element of time did not figure, as local merchants are disposed to keep their stocks down to rather small proportions, and would be unable to do so if they relied on a foreign market for supplies. Only a few orders for structural material have been placed, and none of them require any heavy tonnage. While there are a few good-sized rail orders in sight, the present movement is very moderate.

**Structural Material.**—A contract for about 350 tons for the Kohler & Chase Building, which has been pending for some time, has been awarded to Milliken Brothers. The McClintic-Marshall Company has taken orders for a mining building for the Clara Consolidated Gold & Copper Company of Arizona, and for two small bridges in Stanislaus county, Cal. Dyer Brothers have taken a contract for about 100 tons for the Rochat-Cordes Realty Company's building in this city. An order for harbor work is to be placed this week, and bids on the Hall of Justice, requiring about 2000 tons, will be opened April 12. A small order for a school on Mission street, requiring about 500 tons, will be placed within the next two weeks. The specifications for the Hall of Justice provide for its erection within 110 days, with a penalty for exceeding that time. Starr Bros. are preparing to erect a five story steel frame building at O'Farrell and Stockton streets. Bids will soon be taken on a small class A theatre building for the Chutes Realty Company. The Western Pacific Company has approved plans for a terminal building on its Oakland mole, including a large steel shed. A small tonnage will be required within a week or two for the First National Bank Building at San Jose, Cal. Locally there is no other work in immediate prospect calling for any large quantity, though figures are being taken on numerous small projects. The opinion is expressed in many quarters that few large buildings will be erected in San Francisco by private enterprise in the near future, as the returns on some of the taller class A structures have been disappearing. The inducements for erecting of small business structures, however, as well as first-class hotel buildings, are still strong, and the comparatively low cost of steel construction is expected to prevent any serious decrease of business. The city of Portland, Ore., has disposed of \$450,000 bonds for a new bridge and the contract will be let shortly. Steps are being taken to secure \$1,500,000 for another bridge. The Oakland, Cal., Y. M. C. A. expects to erect a \$210,000 building as soon as the money can be obtained. Work will soon be started on a \$750,000 steel frame hospital building to be erected for the Sisters of Charity in Seattle, Wash.

**Pig Iron.**—The demand for foundry work in the vicinity of San Francisco is rather slow, though on the whole it is gradually improving. Inquiries for machinery castings for development projects in the interior are increasing to some extent, but the requirements in this line are still far below normal. The principal tonnage at present is for bases, columns and architectural work of an ornamental character. Much of this work is being done at extremely low prices, and some of the foundries would shut down but for the large accumulations of pig iron which they find it necessary to dispose of. There is a general pressure to sell, and in view of the uncertain tariff situation it is difficult to find buyers of large lots at any price, as the larger melters are already supplied far beyond their present requirements. Several offers have recently been made at lower quotations, the bottom figures, as far as can be ascertained, being \$21 for Continental iron, \$22.50 for Jarrow and \$22.75, as formerly quoted, for No. 1 Han Yang. Birmingham No. 2 is quoted here at \$21.

**Coke.**—A lot of English coke arrived this week and the market is in a rather overstocked condition. While the leading importers are holding steadily for \$13 on English coke and \$11 on German Syndicate, there is not much moving at these figures, and it is difficult to arouse any interest in cargoes to arrive. There is considerable pressure to sell in some quarters, and a large lot of German Syndicate coke was sold recently at \$9.75.

**Cast Iron Pipe.**—The city of Sausalito, Cal., which has received bids on a lot of steel pipe for a new water system, has suspended action in the matter with a view to placing the order for cast iron pipe. No tonnage of any consequence has been placed in the vicinity of San Francisco, however, and few inquiries are coming up at the moment. The city of San Diego, Cal., has taken bids on a small lot. The city of Oakland has called for bids for furnishing and laying the pipe for its fire protection system, only part of which will be carried out at present. Redwood City, Cal., will award a contract April 12 for 700 ft. of 12-in., 4350 ft. of 10-in., 1200 ft. of 8-in., 2100 ft. of light culvert pipe and a lot of fittings. The city of Manila, P. I., will receive bids June 1 for approximately 7000 tons of bell and spigot pipe and 258 tons of specials. Aside from the large tonnage recently placed by the city of San Francisco, the movement of cast iron pipe on the Pacific Coast is gradually increasing, as it has gained recognition as the standard material for water systems in all locations where the freight is not prohibitive.

**Merchant Pipe.**—The jobbing trade on merchant pipe is beginning to open up, but the demand remains considerably below normal. While some fair inquiries have been received, business is very irregular and the steady distributive movement usual at this time of year is noticeably lacking. Orders placed by the jobbing trade, while of larger volume than a month ago, have been largely of a sorting up character. The local merchants are acting with great caution, owing to the uncertainty of the tariff situation, though they anticipate a liberal movement during the summer. The movement to the

oil fields continues very moderate, but inquiries from that quarter are increasing and several projects under way there are likely to require a large tonnage. Los Angeles parties are preparing to lay a 20-mile pipe line for a water supply for Maricopa, in the California oil fields. The Pacific Coast Supply Company has taken a contract for 12,000 ft. of 2-in. pipe for the town of Gridley, Cal. Several pipe line projects are under way in the Nevada mining districts. The need of more pipe lines is strongly felt in the California fields, and plans have been made for a large amount of installation as soon as the financial situation clears.

**Old Material.**—There is practically no market for steel scrap here at present. Since the departure of about 5000 tons for the Atlantic coast there has been no reduction of stocks and several interests are holding a heavy tonnage. The United Railroads is taking out a large amount of old rails and reinforcing material from its old Market street cable road and this material is being stored for the present. Cast iron scrap is very quiet, but the last few months have brought considerable reduction in stocks of heavy material, prices on which are held at about \$19 per ton. The copper and brass scrap left by the fire of 1906 is about cleaned up.

The first shop of the Doak Sheet Metal Works plant in South San Francisco has been completed and is now in operation. Work has been started on the second building, which will cover an area of about 27,000 sq. ft.

The Pacific Hardware & Steel Company has purchased the hulks of two steel ships which have been lying on the beach near the Columbia River for the last three years. The material will be used by the Portland Rolling Mills.

The electric iron furnace at Heroult, Cal., is starting operations on a commercial scale, after a long delay on account of the floods during the winter.

The Phoenix Artistic Bronze & Iron Foundry has been incorporated in Seattle, Wash., with a capital stock of \$10,000, by P. L. Richards and Leon Morel.

S. E. Starr of the Delano Machine and Iron Works of Delano, Cal., has transferred his interest to E. Alderson and A. M. Collins.

The Acme Iron Works has been incorporated in Sunnyvale, Cal., with a capital stock of \$200,000, by J. M. Johnson, C. C. Herbert, A. C. Johnson, C. C. Spaulding and A. C. Albertson. Work has been started on a factory for the manufacture of the Johnson traction engine and a patent gas engine.

The National Foundry Company, Albuquerque, N. M., will build a \$50,000 foundry and machine shop. The contract has been awarded for the building.

## Pittsburgh.

PARK BUILDING, April 14, 1909.—(By Telegraph.)

**Pig Iron.**—Dealers and furnace companies report more inquiry for pig iron from the Eastern and Western districts, but the local demand is light, being only for small lots up to 200 tons. The merchant furnaces in the two valleys are carrying pretty heavy stocks of pig iron, and some of them will probably blow out in the near future unless the demand improves. Prices are soft, and we quote sand cast Bessemer at \$15; basic, \$14, for spot shipment, and \$14.25 to \$14.50 for second and third quarter deliveries; malleable Bessemer, \$14.25; No. 2 foundry, \$14 to \$14.25, and gray forge \$13.50, all at valley furnace, carrying a freight rate of 90c. a ton for Pittsburgh delivery.

**Steel.**—Reports are current of Bessemer and open hearth billets being offered below \$23, and sheet and tin bars below \$25 for delivery in the Pittsburgh District. Some time ago an Eastern steel producer made contracts with some local consumers of sheet and tin bars at a price to be \$1 a ton above the price of billets, and deliveries on these contracts at about \$24, Pittsburgh, are being made.

**Ferrosilicon.**—A leading local consumer has bought about 125 tons of 50 per cent. ferrosilicon, for forward delivery, at about \$58, Pittsburgh. Some local sellers are absolutely refusing to meet this low price.

**Steel Bars.**—Leading makers are now freely quoting 1.15c., Pittsburgh, on steel bars for prompt shipment and on definite orders in carloads and larger lots.

(By Mail.)

Sentiment in the trade is decidedly better. More new business is being placed with the mills than at any time in the past year and a half. In structural steel a great deal of new work is coming up, some of which, however, will probably not be specified for this year. Specifications against contracts for steel bars, and new orders as well, are coming in freely, while the tin plate mills report that they are busier now than at any time for months. The demand for sheets is improving very slowly, but merchant pipe is in good demand, with some heavy business in the larger sizes pending. The expected break in prices of wire products has come, but the situation is under control, and the decline so far does not exceed \$1 a ton, except in very special cases

and to the largest jobbers who are being named a slightly greater reduction. The scrap and coke trades continue dull, especially the latter. It is evident there must be further putting out of coke ovens, as stocks of coke pressing the market for sale are very heavy. Low prices are being made on both furnace and foundry coke for spot shipment.

**Ferromanganese.**—The market is slightly weaker and some fairly large lots of foreign 80 per cent. have been sold on the basis of \$41.50, Baltimore, or \$43.45, Pittsburgh. The local inquiry is light, the consumption of ferro being smaller than for a long time.

**Ferrosilicon.**—This material is weaker, and while we quote 50 per cent. at \$58, Pittsburgh, on a firm offer this would be shaded.

**Muck Bar.**—There is absolutely no new demand. In the absence of sales on which to base prices, we quote best grades of muck bar, made from all pig iron, at nominally \$25, Pittsburgh.

**Rods.**—In sympathy with the weaker market on wire products, prices of rods have materially declined. We quote Bessemer and chain rods at \$29 to \$30, and open hearth at about \$30, f.o.b. Pittsburgh.

**Skelp.**—The demand for steel skelp is dull, but there is a fair inquiry for iron skelp, and specifications against contracts are coming in freely, the mills rolling sheared iron plates having a good deal of business on their books. We quote grooved steel skelp at 1.25c. to 1.30c.; sheared, 1.35c. to 1.40c.; grooved iron, 1.50c. to 1.55c., and sheared iron, 1.60c. to 1.65c., all f.o.b. Pittsburgh.

**Steel Rails.**—The Carnegie Steel Company has booked an order from a leading railroad for 6000 tons of standard section rails for prompt delivery, and they are being rolled at the Edgar Thomson mill this week. This company received new orders and specifications against contracts in the past week for a little over 1000 tons of light rails. Prices on light rails are slightly firmer, partly due to the shutting down of the plant of the bankrupt Maryland Rail Company, Cumberland, Md. Standard sections remain at \$28, at mill, while light rails, 25 to 45 lb., rolled from billets, are \$22 to \$23, and 16 to 20 lb., \$23 to \$24, maker's mill. On rerolled rails these prices might be shaded possibly \$1 a ton. Splice bars are firm, at 1.50c., at mill.

**Plates.**—The heavy business being booked in structural material includes a fairly large tonnage of plates, and this is helping the mills out to a considerable extent. The steel car companies are taking good quantities of plates, but the demand from boiler shops and other consumers is light. The general price of plates, ¼-in. and heavier, is 1.30c., Pittsburgh, but on desirable orders some mills are shading this price.

**Structural Material.**—The largest contract placed in the week is that of the New York Central Railroad for about 39,000 tons, of which 19,500 tons went to the American Bridge Company, about 13,500 tons to the Lackawanna Steel Company and 6000 tons to the King Bridge Company, Cleveland. The viaduct at Cleveland, originally placed with a local concern, which was the lowest bidder, is now said to have been given to the King Bridge Company, largely on account of demands made by labor unions in Cleveland, which wanted the steel fabricated and erected in local shops. The Erie Railroad has placed 3600 tons with the American Bridge Company for a viaduct in New Jersey, while a local interest was the lowest bidder on about 1600 tons for the Onondaga Hotel, Syracuse, N. Y. The only local work of moment in sight is the steel for the new building of the Pittsburgh Athletic Association, about 1400 tons, bids on which will be asked in a short time. A leading structural interest is now refusing to accept business based on less than 1.30c., Pittsburgh, and the market is now more nearly represented by this price than at any time for several months. It is said that several structural concerns have taken work recently based on 1.15c. to 1.20c. for the plain material, and when this business was offered to the mills they refused to accept it.

**Bars.**—Specifications on contracts for steel bars are heavier than at any time for more than a year. The implement makers have been specifying freely, but as their season's work is pretty well closed up, the demand from this class of consumers may show a falling off for the time being. The center of interest now in the steel bar trade is the contracts of the implement makers and wagon builders, and it will be of interest to note what action the mills will take in regard to these contracts, and how far ahead they will book business at present prices. It is said that two or three of the leading makers of steel bars will book ahead for the balance of this year, while others will not sell beyond July 1. The demand for iron bars continues light, and concessions in prices do not seem to stimulate business. A good many former users of iron bars are now taking steel, thereby affecting quite a saving in price. The market on steel bars is fairly strong at 1.20c., Pittsburgh, but in exceptional cases 1.15c. or slightly lower has been done. The price of 1.20c. applies on angles, channels and tees under 3 in., but this price is also shaded in some cases, and we note a sale



of about 2000 tons of light angles, under 3 in., for delivery over the next six months on the basis of 1.15c., Pittsburgh. Common iron bars are held at 1.30c. to 1.35c., Pittsburgh.

**Tin Plate.**—This trade continues active. Leading tin plate mills have entered orders for many thousands of boxes in the last month, while specifications against contracts are coming in freely. The American Sheet & Tin Plate Company this week is operating 200 out of 213 serviceable hot mills, or about 94 per cent. of its capacity. Leading independent tin plate mills are also running practically full. It is believed that the demand for tin plate this year will be the heaviest ever known in the history of the trade. We quote 100-lb. cokes at \$3.40, Pittsburgh, and it is stated that this price is being firmly maintained.

**Sheets.**—The demand is slowly increasing. There is a strong disposition on the part of leading jobbers to contract ahead, but in most cases sheet mills are refusing absolutely to accept contracts without specifications for any delivery and will only accept actual specified orders for delivery prior to July 1. It is believed that possibly before July 1 or shortly after that the demand for sheets will be much heavier than it is now and prices may be higher. The market on one-pass box annealed black sheets is strong on the basis of 2.20c. for No. 28, while No. 28 galvanized is usually quoted at 3.25c., at mill, but in some cases this price is shaded.

**Hoops and Bands.**—Only small orders to cover actual needs are being placed for both hoops and bands, consumers not desiring to contract ahead. The regular price of hoops is 1.60c., but this price is being shaded, depending on the order, while the regular price of 1.20c. on bands is also being slightly shaded in some cases.

**Railroad Spikes.**—General buying by the railroads is showing some betterment, but as yet their orders are mostly for small lots of spikes for repair work. The demand for the smaller sizes is fairly active. We quote railroad spikes at \$1.65 to \$1.70 for 5½ x 9-16 in. and \$1.75 to \$1.80, base, for the smaller sizes, in carload lots, 5c. additional per keg being charged for small lots.

**Merchant Pipe.**—Orders for merchant pipe are coming in quite freely, and aggregate a good tonnage. Recently Spang, Chalfant & Co., Inc., secured an order for 20 miles of 12-in. and 40 miles of 16-in. for the Portland Gas & Pipe Line Company, Kansas. The couplings for this line were placed with the Dayton Pipe Coupling Company, Dayton, Ohio. It is stated that regular discounts on iron and steel pipe, printed elsewhere, are being maintained.

**Boiler Tubes.**—There is a little freer buying by the railroads. The demand for merchant tubes continues dull, but regular discounts are fairly well observed.

**Iron and Steel Scrap.**—The consumption by the mills is only fairly heavy, and as they have moderate sized stocks they are not disposed to take in more unless it is offered to them at very attractive prices. The Pennsylvania Railroad scrap was placed last week, and it is said some of the heavy steel scrap brought as high as \$14.25, per gross ton, Pittsburgh. Dealers quote about as follows, per gross ton, f.o.b. Pittsburgh: Heavy steel scrap, \$14 to \$14.25; cast iron borings, \$7.50 to \$8; bundled sheet scrap, \$11 to \$11.25; No. 1 cast scrap, \$13.50 to \$13.75; No. 2, \$12.75 to \$13; No. 1 railroad malleable scrap, \$13.75 to \$14; sheet bar crop ends, \$14.50 to \$14.75; low phosphorus melting stock, 0.04 and under, \$16.50 to \$16.75; rerolling rails, \$14 to \$14.25; steel axles, \$15.75 to \$16; grate bars, \$10.25 to \$10.50; old car wheels, \$14.75 to \$15; machine shop turnings, \$9.25 to \$9.50. Locomotive tires are \$16 to \$16.25, and locomotive axles are \$22.25 to \$22.50, and iron rails about \$15.50.

**Coke.**—It is evident that too much coke is being made and that more ovens will have to be put out before any improvement can be expected. The agreement made some time ago among some of the independent producers to hold furnace coke for prompt shipment at \$1.75 a ton at oven is a dead letter. Standard grades of furnace coke for prompt delivery can be bought readily at \$1.60 per net ton, at oven, and a recent sale of 10,000 tons to a furnace interest, all for shipment this month, has been made at a somewhat lower price. Standard 72-hr. foundry coke for spot shipment has sold as low as \$1.75, at oven, but most producers ask \$1.90 to \$2. Furnace coke on contracts running up to October 1 is held at about \$1.80 and 72-hr. foundry at \$2 to \$2.15, at oven.

## Cleveland.

CLEVELAND, OHIO, April 13, 1909.

**Iron Ore.**—The market is beginning to show a little life. A few small lots have been sold at the same prices that prevailed last year, and considerable interest has been aroused over the report of a sale of 500,000 tons. This sale, if made, is being guarded with unusual secrecy. In addition to the sales reported, which were the first in several weeks, a number of reservations were made. Canadian consumers of Lake Superior ores have about all made reservations for their year's requirements. The movement of ore from Lake

Erie docks is fairly good. It is estimated that the stocks left on the docks May 1 will be about the same as at the same time last year, namely, 5,480,000 tons. No change has developed in the lake labor situation, and there appears to be no chance of a settlement between the Lake Carriers' Association and the union engineers over the open shop question. The managers of four package freight lines have agreed to employ engineers without requiring them to sign the open shop contracts, but other managers are holding out firmly for the open shop policy. Some of the boats of the Pittsburgh Steamship Company will be placed in operation as soon as navigation is open in Lake Superior. Ore prices at Lake Erie docks, per gross ton, are as follows: Old range Bessemer, 4.50; Mesaba Bessemer, \$4.25; old range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

**Pig Iron.**—The low prices now prevailing have brought a little activity in the market, and one interest reports sales aggregating about 7000 tons. This was largely foundry iron, but part was malleable and part basic, and was mostly for delivery in the second and third quarter. A few fairly good inquiries are pending. Sellers are willing to take contracts for the third quarter, but are not anxious to make sales for the entire last half. An inquiry from an Erie forge plant which has been out for some time resulted in the placing of a contract for 4000 tons of basic iron for delivery over the balance of the year. The demand in this immediate territory shows no improvement. Jobbing foundries making light gray castings and implement makers are taking their iron freely, but shipments on considerable iron are being withheld by other consumers. No. 2 foundry is quoted at \$14 to \$14.25 Valley furnace for the second quarter, and \$14.50 for the last half. For second quarter delivery we quote, delivered, Cleveland, as follows:

Bessemer .....	\$15.90 to \$16.15
Northern foundry, No. 1 .....	15.15 to 15.40
Northern foundry, No. 2 .....	14.90 to 15.15
Northern foundry, No. 3 .....	14.40 to 14.75
Gray forge .....	13.90 to 14.40
Southern foundry, No. 2 .....	15.35
Jackson County silvery, 8 per cent. silicon .....	20.05

**Coke.**—A local interest is figuring on an inquiry from Pittsburgh for 10,000 tons of furnace coke per month for the last half. No sales except small lots are reported. We quote standard Connellsville furnace coke at \$1.50 to \$1.65 for spot shipment and \$1.70 to \$1.80 for the balance of the year. Standard 72-hr. Connellsville foundry coke is held at \$1.90 to \$2 for spot shipment and \$2.15 to \$2.25 on contract.

**Old Material.**—No inquiries for round tonnages have developed and mills in this territory are buying only in small lots for immediate needs. The larger steel making plants seem to be pretty well supplied with scrap. Prices remain stationary, but dealers look for an advance as soon as the demand improves. Yard dealers are waiting for the expected advance, and not much scrap is available at present prices. The Lake Shore Railroad will close April 15 on a list of about 3000 tons. Dealers' prices, per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails .....	\$12.50 to \$13.00
Old iron rails .....	15.40 to 16.00
Steel car axles .....	17.00 to 17.50
Old car wheels .....	14.00 to 14.50
Heavy melting steel .....	11.50 to 12.00
Relaying rails, 50 lb. and over .....	21.50 to 22.50
Agricultural malleable .....	11.00 to 11.50
Railroad malleable .....	11.50 to 12.00
Light bundled sheet scrap .....	7.50 to 8.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles .....	\$17.00 to \$17.50
Cast borings .....	6.00 to 6.50
Iron and steel turnings and drillings .....	7.00 to 7.50
Steel axle turnings .....	9.00 to 9.50
No. 1 busheling .....	10.00 to 10.50
No. 1 railroad wrought .....	12.00 to 12.50
No. 1 cast .....	11.50 to 12.00
Stove plate .....	10.00 to 10.50
Bundled tin scrap .....	9.00

**Finished Iron and Steel.**—Prices on steel bars have become somewhat demoralized, and business is being taken freely by some of the mills on the basis of 1.15c., Pittsburgh. This can probably be shaded to 1.10c. for desirable contracts for immediate delivery. Some contracts with the implement makers were closed during the week at 1.15c. for delivery over the balance of the year. Other implement makers are in the market, but are holding out for contracts until July 1, 1910. Mills so far have refused to make contracts beyond January 1. The inquiry from an Ohio boiler maker for 1000 tons of plates, noted last week, resulted in the placing of the order in Pittsburgh at a price concession. On small orders the price of plates seems to be well maintained. On structural material prices are being firmly maintained. The structural outlook is very satisfactory, considerable new work being in sight in this city in addition to that previously noted. The contract for the Denson-Harvard bridge, Cleveland, 6300 tons, has not yet been placed. There is a possibility that the McClintic-Marshall Construction Company will not get the contract and that it will go to the second lowest bidder, the King Bridge Company, owing to the shorter time in which the latter agreed to complete the work. There is a fair demand for twisted bars for reinforcing

work, and one inquiry for 150 tons during the week resulted in the placing of the order at a price concession. The demand for sheets shows an improvement, and while prices are fairly well maintained, there are some reports of concessions. The demand for iron bars continues weak and the market is open. Local mills continue to quote on the basis of 1.25c., Pittsburgh. Jobbers report considerable improvement in warehouse business on all lines.

### The German Iron Market.

BERLIN, April 3, 1909.—The news from the iron industry has continued almost uniformly bad. Although we are at the beginning of spring there have been seen as yet no signs of that improvement in business which had been predicted in some quarters. This improvement was expected to be seen first in structural steel; but the nonappearance of brisker business in that branch is now explained by those who expected it by pointing to the fact that the winter continued right up to the end of March. Hence those few hopeful spirits are still predicting better business this month. What warrant they have for that expectation is not yet clear. Very likely they rely upon the fact that the Balkan war scare has finally blown over, that money has again grown cheap in consequence, and that the stock markets have once more become buoyant. How far these outside factors may affect the iron trade remains to be seen. It is at least something gained to have a part of the business community in a hopeful spirit.

#### Prices Are Lower.

The price situation has grown worse. Where prices are the result of free competition they have further shaded off. On the Duesseldorf Exchange, where iron prices are quoted once in two weeks, the prices at the session of April 2 were again somewhat lower, after they had weakened a fortnight before. The demoralization of the bar trade has grown more pronounced, and prices for the home market are now down as low as 97, and even 96 marks a ton at the works for soft steel bars, with prices for export correspondingly lower. Some of the associations in other parts of the trade made slight cuts in prices for this quarter, but the Steel Syndicate left all prices unchanged.

The general feeling of depression and uncertainty has been deepened by the failure of efforts to renew or create various trade combinations. The Luxemburg Pig Iron Syndicate was at one time so nearly completed in its organization that it was looked upon as certain to be renewed; but several weeks ago it was announced that the negotiations had finally broken down, and since that time all efforts toward taking them up anew have been abandoned. The bar trade, too, has for some months been occupied with plans for organizing. The Steel Syndicate only makes allotments for that specialty, leaving it to each company to sell its product as best it can. Various meetings of bar mills have been held, but these have resulted in nothing tangible, owing to the fact that one or two wanted allotments that seemed to the others unreasonably large; so the prospects for effecting the organization have sunk to zero.

The same thing is practically true in respect to the heavy plate trade. Various conferences between the works concerned have recently been held. The latest of these occurred April 2, at Cologne, but it also was without result. It seems that the big demands of one or more mills for allotments are in this case also responsible for the failure of the negotiations.

#### The Steel Syndicate's Future Not Assured.

All things considered, therefore, the prospects for trade organizations in the iron industry are rather dubious, to say the least. It begins even to be said in the trade press that the prospects for the renewal of the big Steel Syndicate upon its expiration are growing visibly less bright. The expansion of some of the biggest companies in the organization is expected to wreck it. The most notable case in point just now is that of the great Gelsenkirchen Coal Company, which several years ago absorbed two important iron companies in order to be able to consume a large part of its own coal, of which it now produces 8,500,000 tons a year. This great company has decided to raise above \$14,000,000 in stocks and bonds in order to erect a large steel works. It will be situated partly in Luxemburg and partly in Lorraine, and very near the French frontier, across which the company owns valuable iron ore mines. Hitherto it has had to transport its ores several hundred miles to its works north of the Rhine, which involved heavy expense for freights. The steel works to be erected, which will be supplied with a battery of the best type of blast furnaces, will enable the company to turn out steel 10 to 12 marks a ton cheaper than at present.

Now the plans of this company, with its huge size, its immense capital and its increased facilities for cheap production, are much discussed in the trade, where it is thought that the scheme bodes no good for the Syndicate, and some are already saying that Gelsenkirchen will make demands for such large allotments that it will disrupt the big combination—all the more so, as some of the other mammoth com-

panies are also planning extensions of their mills. This latter is true of Krupps, who some time ago acquired land for new mills.

The statement given to the press by the Gelsenkirchen directors in announcing their financial plans contains some remarks which will be very interesting to American iron men, who have not so fully realized the advantages of saving the furnace gases and creating power with them in big gas engines as the Germans have. The statement says that the development of the big gas engines has caused the advantages of having the steel mill in immediate proximity to the furnaces to become more and more apparent. A great reduction in the costs of production is secured, say the directors, by thus cheapening the cost of power and bringing the converters and rolling mills in easy reach of the furnaces and the power plants.

In the three great syndicated products, namely, steel rails, structural shapes and billets, there has been little change. In the last named specialty buyers are holding off, being dissatisfied with the high prices which the Syndicate maintained unchanged for this quarter. When it becomes necessary to order new supplies consumers are taking only the lowest possible amounts to meet immediate wants. English competition in the structural line has depressed prices, owing to the stagnation in this section of the English trade. In heavy steel rails, as the Syndicate complains, the orders of the state railroads are much lighter than last year, and the periods for delivery have been stretched out as long as possible. Trade reports, however, say that quite recently the business in heavy rails has been a little better, and that the Syndicate has been able to turn over considerable orders to the different mills. Where these orders came from is not mentioned, but evidently they were from abroad. Good orders for grooved rails have been received from a number of municipalities; but the business in rails for mines has latterly grown worse.

#### Wrought Iron Hurt by Soft Steel.

The condition of the wrought iron market has grown less and less satisfactory, and prices have further weakened. Owing to the phenomenal cheapness of soft steel bars and other products, consumers are resorting to that material in preference to wrought iron. While some heavy plate mills are supplied with work for four or five weeks, others are said to have barely more than one week. Prices for heavy plates as low as 103 marks, and even lower, are mentioned.

The brisk business in wire rods previously reported continues, but doubt is expressed at the mills as to whether the activity will last. Business also remains good in wire and wire nails, the works being fully occupied with their spring orders. It is expected that this specialty will hold its own. The uncertainties in the international political situation, which have just been happily removed, had an unfavorable effect upon the export trade in wire and wire nails. It is understood that the international arrangement as to wire has recently been extended to wire nails also.

The trade in steel castings is in a bad way. There is a syndicate controlling this branch of the trade, but there are a number of independent concerns which are making things hot for the syndicate, and prices have been beaten down to a level where profits have in many cases disappeared. The syndicate itself now needs to be renewed, but its prolongation is meeting with serious difficulties. Under the circumstances the renewal has been temporarily effected to the end of June.

The Association of German Machine Shops met here a fortnight ago and gave a discouraging view of the machinery trade. The shops were reported as being even more poorly supplied with orders than last year, and prices as having dropped to near the costs of production and still going lower. The president mentioned in his address the fact that the shops have to encounter the growing disadvantages of high costs of raw material through the price-policy of various syndicates, and wages tending constantly higher from year to year. He also said that the association had been trying for some years to organize the trade for the purpose of regulating production and prices, but this has always been found too difficult owing to the great diversities in product, methods of work and costs of production with the various shops.

While Germany's exports in general are keeping up nearly to the level of last year, the exports of machinery have latterly dropped off sharply. The heaviest reduction has been in the exports of machinery for manufacturing purposes. The exports of machine tools in the first two months of the year reached only 5900 tons, against 7700 for the like months of last year. The exports of mining machinery for the first two months were about 30 per cent. below the level of last year. The reduction in the trade with England accounts for the greater part of the shrinkage.

The Ludwig Loewe Company, Berlin, which is well-known to American mechanical engineers as the leading European concern engaged in manufacturing machine tools upon American models, has again declared a dividend of 16 per cent. It has kept up that rate for three years. The company reports a bigger shrinkage of its export than its home business.



## Metal Market.

NEW YORK, April 14, 1909.

**Pig Tin.**—Excepting a fair business done by a few concerns on Friday and Saturday, trade has been dull. What buying was done, though, was by consumers; much of the trading done in the last few weeks has been among dealers themselves. Prices are too high to attract buyers; there is a large quantity of tin here which must either come on the market or go into consumption direct. In either case the result is the same; some time later not so much tin will be imported. Price changes during the week, while unimportant, have been toward higher levels, as follows:

	Cents.
April 7.....	29.25
April 8.....	29.40
April 9.....	29.40
April 12.....	29.40
April 13.....	29.50
April 14.....	29.35

The arrivals so far this month are 1390 tons and the floats 1430 tons. The London market closes a little higher than last week at £133 5s. for spot and £134 7s. 6d. for futures.

**Copper.**—The statistics of production and deliveries into consumption of copper issued by the Copper Producers' Association on Monday of this week were not as unfavorable as previously. They were received in the metal trade with a fair degree of satisfaction. It is proper to point out that the figures taken by the Copper Producers' Association and by the New York Metal Exchange regarding exports and imports do not agree as they cover different periods of time. This may have caused a little confusion in the minds of some. The figures of the Copper Producers' Association are for deliveries into consumption, there being no way of determining actual consumption. The price of electrolytic copper is higher than last week at 12.75c., net cash, New York. Lake is nominal at 13c. and casting is firmer at 12.50c. The exports to Europe are larger, but copper is again being financed there. So far this month the exports have amounted to 12,300 tons. Talk of a general curtailment of production is ridiculous, as long as the price is as high as to-day. It may be pointed out that one selling agency is quoting 12.62½c. for electrolytic, but is not taking business from domestic consumers at that figure. The London market closes higher than last week at £57 10s. for spot and £58 5s. for futures.

**Lead.**—The market is firm. The advance in the price of shipment lead five points April 12 by the American Smelting & Refining Company was no surprise. Previous to the announcement, it was thought lead would be advanced to 4.25c. instead of 4.15c., as was the case. In St. Louis the market is stronger than anywhere else, outside sellers asking 4.10c. at that point. The New York market has, in second hands, much lead bought at lower prices, which they are willing to dispose of for prompt cash at 4.17½c. to 4.20c. Numerous inquiries have been made regarding prices, but the business ruling is now going to the leading interest.

**Spelter.**—Tariff considerations being construed as favorable to holders of spelter, the market is much firmer. For spot shipment, New York, 4.85c. to 4.90c. is named. Sellers take a most independent attitude when questioned regarding prices for future deliveries. Some refuse to quote at all, and others name prices out of reason. In St. Louis prices are 10 points higher than last week at 4.77½c. The demand is not large, yet the buying is more evenly distributed than for a long time.

**Antimony.**—The market is dull, and for the want of something better to do holders of antimony—and they are holders—point out what a great difference the tariff will make in the price. This is not very seriously entertained. The advancing London market has brought no change in prices here. Hallett's continues to be offered at 7.75c., Cookson's at 8c. and other brands, 7.50c. to 7.75c.

**Tin Plate.**—Business is fair, but consumers all along the line are reluctant to stock any quantity. Prices are unchanged at \$3.64, New York, and \$3.45, Pittsburgh, for 100-lb. IC coke plates, subject to the usual rebate of 5c. per box on large orders. In Swansea Welsh plates are unchanged at 11s. 6d.

**Old Metals.**—Trade in ingot copper is dull, and there is little call for scrap. As pointed out several times, the difference in price between new and old copper is too small to attract some consumers who ordinarily would buy scrap. Dealers' selling prices are unchanged from last week as follows:

	Cents.
Copper, heavy cut and crucible.....	12.25 to 12.50
Copper, heavy and wire.....	12.00 to 12.25
Copper, light and bottoms.....	11.00 to 11.25
Brass, heavy.....	9.00 to 9.25
Brass, light.....	7.00 to 7.25
Heavy machine composition.....	11.25 to 11.50
Clean brass turnings.....	8.00 to 8.25
Composition turnings.....	9.75 to 10.00
Lead, heavy.....	3.85 to 3.90
Lead, tea.....	3.60
Zinc scrap.....	3.62½

## New York.

NEW YORK, April 14, 1909.

**Pig Iron.**—Buyers are covering only from hand to mouth, and are occasionally feeling the market for the second half. Prices for early delivery vary within pretty wide limits and some sellers are apparently determined to keep iron moving. Others will not consider deliveries beyond July 1 at the present level of prices. We quote \$16 to \$16.50 for No. 1 Northern Foundry, \$15.50 to \$16. for No. 2 Foundry and \$15 to \$15.50 for No. 2 plain, at tidewater. Alabama iron is quoted \$15.75 to \$16 for No. 1 Foundry, and \$15.25 to \$15.50 for No. 2 Foundry.

**Steel Rails.**—The Cuba Railroad order for 20,000 tons of 70-lb. Bessemer rails has been placed with the Lackawanna Steel Company. The Carnegie Steel Company has booked 5000 tons for the Carolina, Clinchfield & Ohio, in addition to the 5000 tons which the Tennessee Company took last week. Chicago District mills have booked, in addition to 11,500 tons for the Great Northern, referred to two weeks ago; 6000 tons for the Minneapolis, St. Paul & Sault Ste. Marie; 3500 tons for the Lake Shore (an additional order), 2000 tons for the Idaho & Washington Northern, 2500 tons for the Chicago, Indiana & Louisville and 4000 tons for trolley lines. The Great Northern has now placed in all 16,500 tons of open hearth rails for 1909, an award of 5000 tons in addition to the above having been made to the Pennsylvania Steel Company.

**Structural Material.**—The New York Central contract for 39,000 tons has been virtually awarded. For the completion of the new station in New York, 8000 tons has been awarded to the American Bridge Company. The yard work in New York and the bridge work on the Vanderbilt lines, altogether amounting to about 31,000 tons, will be divided among the Lackawanna Steel Company, the American Bridge Company and the King Bridge Company. The Erie viaduct at Jersey City, 6000 tons, has been let in the past week and there remains 6000 tons of bridge work which will probably be divided among several bidders. The Buffalo, Rochester & Pittsburgh is in the market for 2500 tons, and the Pennsylvania Lines West of Pittsburgh will receive bids this week on 1100 tons of track elevation work at Chicago. In May the Reading elevated work in Philadelphia is to be bid in, and there remains the contract of the Missouri Pacific. Otherwise the railroad demand ahead of the fabricating companies is unimportant. Building has been very active and a large amount of business in steel construction is in sight. In New York City it has been computed that 78,000 tons of structural steel for buildings has been contracted for since January 1, while projects calling for 81,000 tons are being figured on. A good many apartment house contracts have been let recently and in the past week awards of this character, together with one or two loft buildings, call for about 4000 tons. At Whitinsville, Mass., the Whitin Machine Company Building, requiring 2200 tons, was awarded to the Boston Bridge Company. The pressure on prices continues and low as prices have been the expectation of some buyers seems still unsatisfied, a number of projects being held up apparently on this account. We continue to quote on mill shipments of plain material, seaboard deliveries, as follows: Beams, channels, angles and tees, 1.46c.; tees, 1.51c. On beams, 18 to 24 in., and angles over 6 in., the extra is 0.10c. Structural material, cut to lengths, is sold in small lots at 1.90c. to 2c.

**Ferroalloys.**—Lower prices have again been made on ferromanganese, and sales are reported at \$41, Baltimore. Sellers are quoting this figure for third quarter business, but protect themselves against any change in duties. A fair trade is being done in 50 per cent. ferrosilicon at \$58 to \$59, Pittsburgh.

**Bars and Plates.**—Conditions continue quiet in these trades. Common bar iron is selling at 1.30c. to 1.35c., best refined at 1.40c. to 1.50c. and steel bars at 1.31c., tidewater. Tank and ship plates are quoted at 1.46c., tidewater.

**Cast Iron Pipe.**—Inquiries have been quite small for some days. Nothing of importance is immediately in sight. Carload lots of 6-in. are quoted at \$23.50 per net ton, at tidewater.

**Old Material.**—The market is slightly recovering from its stagnant condition. Practically every malleable foundry in the East is now inquiring for malleable scrap. The steel mills are buying in small quantities, but make their own prices and confine their purchases to the highest grades available, demanding selected railroad scrap and refusing to take industrial scrap. A somewhat better demand is observed for old car wheels. Wrought scrap continues neglected, as the rolling mills are still out of the market. Quite a number of the bar mills are closed, and those now running appear to have ample stocks of old material. The railroad companies seem less disposed to press their accumulations of old material on the market. The lists this month are not quite so heavy as they have been, and bids by dealers are not being accepted as readily as in the past

couple of months. The following quotations are per gross ton for New York and vicinity:

Old girder and T rails for melting.....	\$9.50 to \$10.00
Heavy melting steel scrap.....	9.50 to 10.00
Relaying rails.....	19.00 to 19.50
Old iron rails.....	14.00 to 14.50
Standard hammered iron car axles.....	14.50 to 15.00
Old steel car axles.....	14.00 to 14.50
No. 1 railroad wrought.....	11.50 to 12.00
Iron track scrap.....	9.50 to 10.00
No. 1 yard wrought, long.....	11.00 to 11.50
No. 1 yard wrought, short.....	9.50 to 10.00
Light iron.....	6.00 to 6.50
Cast borings.....	5.00 to 5.50
Wrought turnings.....	6.00 to 6.50
Wrought pipe.....	8.00 to 9.00
Old car wheels.....	13.00 to 13.50
No. 1 heavy cast, broken up.....	12.00 to 12.50
Stove plate.....	9.50 to 10.00
Locomotive grate bars.....	9.50 to 10.00
Malleable cast.....	11.00 to 11.50

### Iron and Industrial Stocks.

NEW YORK, April 14, 1909.

Holiday interruptions usually cause some weakness in prices of stocks, but the intervention of the Easter holidays last week proved to be an exception. Prices of all stocks were firmly held, and notable advances were made in some, particularly the International Harvester. The range of prices from Thursday of last week to Monday of this week was as follows on active iron and industrial stocks:

Allis-Chalm., com..	14½-15	Railway Spr., com.	39-40
Allis-Chalm., pref..	46½-47½	Railway Spr., pref..	100
Beth. Steel, com.....	22½	Republic, com.....	22½-22¾
Can, com.....	8½-9½	Republic, pref.....	74½-74¾
Can, pref.....	74-76½	Sloss, com.....	74½-76
Car & Fdry, com.....	49½-50½	Sloss, pref.....	29½-33
Car & Fdry, pref.....	111	Pipe, pref.....	74½-76
Steel Foundries.....	38-38½	U. S. Steel, com.....	50-52½
Colorado Fuel.....	37½-40½	U. S. Steel, pref.....	113½-115
General Electric.....	158½-161	Westinghouse Elec.	82½-84½
Gr. N. ore cert.....	69½-70½	Am. Ship. com.....	54½
Int. Harv., com.....	72-78	Cambria Steel.....	35½-36
Int. Harv., pref.....	113-120½	Lake Sup. Corp.....	21½-24
Locomotive, com.....	54½-55½	Warwick.....	7½-8
Nat. En. & St., com.....	13½-14½	Crucible St., com.....	7-7½
Pressed St., com.....	37½-38½	Crucible St., pref..	59-59½
Pressed Steel, pref.....	98½	Harb.-Walk. Ref., com...	17

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 51½, preferred 114½, bonds 104; Car and Foundry common 50½, preferred 111; Locomotive common 55½, preferred 114½; Colorado Fuel 38½; Pressed Steel common 38, preferred 99; Railway Spring common 39½; Republic common 22½, preferred 74½; Sloss-Sheffield common 75½; Cast Iron Pipe common 31½; preferred 74½; Can common 8½, preferred 75½.

### Iron and Steel Bonds.

Chisholm & Chapman, 18 Wall street, New York, furnish the following quotations:

	Bid.	Asked.
Bethlehem Steel 1st ext. 5s, due January, 1926.....	83	83½
Bethlehem steel purch. money 6s, due August, 1908.....	115½	118½
Buffalo Iron 5s, due October, 1925.....	100	103
Buffalo & Susquehanna Iron 1st 5s, June, 1932.....	98½	101½
Buffalo & Susquehanna Iron deb. 5s, January, 1926.....	98½	101½
Domination Iron & Steel 5s, due July, 1929.....	90	91½
La Belle Iron Works 1st 6s, due December, 1923.....	103½	105½
Lackawanna Steel 1st 5s, due April, 1923.....	100	104½
Maryland Steel 1st 5s, due February, 1922.....	100	101½
Penn Steel 1st 5s, due November, 1917.....	101	101½
Pennsylvania & Maryland Steel 6s, due Sept., 1925.....	109	110½
Republic Iron & Steel 1st 5s, due October, 1934.....	98½	101½
Sloss Iron & Steel Company 1st 6s, due Feb., 1920.....	106	108½
Sloss Iron & Steel Co. consol. 4½s, due April, 1918.....	94½	96
Jones & Laughlin 1st 5s, due May, 1939.....	99½	99½

### United States Steel Corporation.

Collateral Trust 5s, Series A, C, E, due April, 1951.....	114½	115½
Collateral Trust 5s, Series B, D, F, due April, 1951.....	114½	115½
Sinking Fund 5s, due April, 1963.....	103½	103½
Union Steel 1st 5s, due December, 1952.....	104½	104½
Clairton Steel 5s, due 1908-1913.....	100	104½
St. Clair Furnace 1st 5s, due 1910-1939.....	100	100
St. Clair Steel 1st 5s, due 1908-1926.....	100	100
Illinois Steel deb. 5s, due January, 1910.....	100½	100½
Illinois Steel 5s, due April 1, 1913.....	100½	100½

All bonds quoted "and interest."

**Dividends.**—Henry R. Worthington, Inc., New York, has declared the regular semiannual dividend of 3½ per cent. on the preferred stock, payable May 1.

The International Steam Pump Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable May 1.

The Crocker-Wheeler Company, Ampere, N. J., reports that business taken in March showed improvement over the February bookings. The demand was largest for direct current machinery. The greatest improvement was shown in motors for the printing trade and the steel industry, although all classes of business showed some improvement. The past week an order was received for 350 hp. of rolling mill motors for the West Penn Steel Company, Brackenridge, Pa., and a 250-kw. direct cur-

rent machine was added to the large Crocker-Wheeler power plant already installed at the Northwestern Terra Cotta Company, Chicago. A 50-kw. generator to be driven by a De Laval steam turbine was ordered for lighting and power at the McCahan Sugar Refining Company, Philadelphia.

### The Consumption of Iron and Steel Scrap.

An article in the *American Metal Market*, New York, deals with the consumption of iron and steel scrap in the United States. No authoritative statistics on this subject are available except such as are given in the census reports dealing with iron and steel production, and these are not complete. The article in question deals with 1907, since 1908 was not a normal year. The production of steel ingots in 1907 was 22,559,477 gross tons and the production of rolled steel was 17,664,736 tons. The difference, 4,894,741 tons, was for the most part crops. There was also some scale. Besides the ingots, casting pit scrap, sprues, skulls, &c., were produced. A comparison is made in the article between the production of basic open hearth ingots and castings and the production of basic pig iron, showing that 42.7 per cent. of the basic open hearth steel of 1907 came from scrap. This would mean 4,389,268 tons of scrap, or 500,000 tons less than the total scrap production of the steel works as above. The consumption of scrap in the country is summarized as follows:

	Gross tons.
Bessemer and open hearth steel works.....	5,500,000
Iron mills.....	1,500,000
Foundries.....	2,500,000
Rerolling mills.....	400,000
Miscellaneous.....	100,000

About half this total, it is estimated, is not market scrap, but waste material, which largely goes back into the open hearth furnaces and Bessemer converters from which it came.

**Dunbar Furnace Output Correction.**—In the item printed in *The Iron Age* last week relating to the output of No. 2 furnace of the Dunbar Furnace Company, Dunbar, Pa., the statement was made that the average coke consumption was 2210 lb. per ton of iron. This should have read 2110 lb. per ton of iron.

Of the 49 blast furnaces in the Pittsburgh District, 38 were in blast on April 1 and 11 were idle. Edith and Neville Island furnaces of the Carnegie Steel Company have been idle for some months, as have the two Schoenberger furnaces of the American Steel & Wire Company. Of the other Carnegie Steel Company stacks, seven Carrie furnaces are in operation, one of the new Carrie furnaces having been started last month; five stacks at Duquesne, eight out of 11 stacks at Edgar Thomson, the two Lucy furnaces, one out of three at Isabella, on ferromanganese, and the three Clairton furnaces. Clinton Furnace of the Clinton Iron & Steel Company is running; also the five Eliza stacks and one Soho of the Jones & Laughlin Steel Company, while of the four Monongahela furnaces of the National Tube Company at McKeesport, three are running and one is idle. Midland Furnace of the Midland Steel Company is in operation, turning out a large product. One Union stack of the American Steel & Wire Company, at Donora, Pa., is running and one is idle.

A party of 275 students from Purdue University visited Chicago last week on an annual trip of inspection, under the guidance of the heads of the mechanical, civil and electrical engineering divisions. Three days were devoted to the purpose, during which time visits were made to the new intake tunnel now under construction at Seventy-second street, the Western Electric Company's Hawthorn plant, the Deering Harvester Works, the city water works and other points of engineering interest. The work of the student body was concluded on Thursday by a trip through the Gary plant of the Indiana Steel Company.



### The Ingersoll-Rand Company's Annual Report.

The report of the Ingersoll-Rand Company for the year ending December 31, 1908, shows that in common with other business interests it suffered a heavy decline in earnings, as compared with the results for the previous year. The figures are as follows:

	1908.	1907.
Net earnings.....	\$891,638	\$1,788,601
Depreciation .....	444,733	433,983
Net for year.....	\$446,905	\$1,354,618
Interest on bonds.....	97,982	100,000
Balance for dividends.....	\$348,923	\$1,254,618
Dividends .....	284,808	285,738
Surplus .....	\$64,115	\$968,880
Special reserve.....		510,000
Net surplus.....	\$64,115	\$458,880
Previous surplus.....	920,632	461,752
Profit and loss surplus.....	\$984,747	\$920,632

The balance sheet, as of December 31, 1908, is given hereunder:

Assets.	
Real estate, buildings, machinery, patents, licenses, &c. ....	\$5,589,562.32
Investments in foreign manufacturing companies..	367,025.00
Total capital assets.....	\$5,956,587.32
Inventories, material in process, &c.....	\$3,725,108.58
Accounts receivable.....	1,325,355.23
Bills receivable.....	118,852.83
Agents' cash balances.....	61,963.01
Marketable securities.....	1,206,440.32
Cash in bank.....	661,129.77
Total current assets.....	\$7,098,849.74
Deferred charges to operation.....	18,277.33
Total.....	\$13,073,714.39
Liabilities.	
Preferred stock.....	\$4,800,000.00
Less in treasury.....	106,000.00
Common stock.....	\$4,694,000.00
First mortgage 5 per cent. bonds.....	\$2,000,000.00
Less in treasury.....	10,400.00
Total capital liabilities.....	\$9,683,600.00
Accounts payable.....	\$147,338.91
Bond interest accrued.....	49,740.00
Preferred stock dividend, payable Jan- uary 1, 1909.....	140,814.00
Total current liabilities.....	337,892.91
Reserves:	
Depreciation reserve as at January 1, 1908 .....	\$668,903.32
Add provision out of earnings for 1908.	444,733.74
	\$1,113,637.06
Less reduction in valuations of cap- ital assets charged against fund...	171,162.81
Patent and license reserve.....	942,474.25
Special inventory reserve.....	625,000.00
Surplus .....	500,000.00
	984,747.23
Total.....	\$13,073,714.39

The company has plants at Phillipsburg, N. J.; Easton, Pa.; Tarrytown, N. Y.; Painted Post, N. Y.; Athens, Pa.; owns the Canadian Rand Company, Ltd., Sherbrooke, Quebec, and manufactures air compressors, rock drills, pneumatic tools and general mining, tunneling and quarrying machinery. The general offices are at 11 Broadway, New York.

**The Steel Ore Dock at Two Harbors, Minn.**—In a paper read before the Northern Railway Club, W. A. Clark, chief engineer of the Duluth & Iron Range Railroad, gives data concerning the steel ore dock at Two Harbors, Minn., built by that road last year. It was described in *The Iron Age* of October 3, 1907, page 908. One consideration now justifying the building of steel docks is that lake vessels, which have been rapidly increasing in size for many years, have now about reached their limit, unless very large sums of money are spent for dredging harbors and deepening passages. Costing two and a half times as much as timber docks the steel docks, in addition to low fire risk and the immunity from interrupted use, have a life of 25 to 30 years, against 10 to

12 years for timber docks. In building the foundations of the Two Harbors steel dock, owing to the low temperature of the water, the cement was slow in setting and was in danger of being washed out of the aggregate. To insure the setting of the cement the contractors ran a pipe, carrying steam at 60 lb., the length of the dock, and by means of hose discharged steam into confined areas, each about 18 x 50 ft. This raised the temperature of the water to about 45 degrees F.

**Asbestos Producers Consolidate.**—A consolidation of the principal asbestos producing properties in the Province of Quebec has been effected, under the name of the Amalgamated Asbestos Corporation, Ltd. It has a capital stock of \$10,000,000 and is controlled by Philadelphia and New York capitalists. The authorized bonded indebtedness is \$15,000,000, of which \$7,500,000 is to be issued at once. The properties taken over, which control, it is said, about 80 per cent. of the Canadian asbestos production, are the British-Canadian Asbestos Company, Ltd.; King's Asbestos Mines, Beaver Asbestos Company, Standard Asbestos Company, Ltd., and Dominion Asbestos Company, Ltd., with which is affiliated the Bell Asbestos Mines, whose output is controlled by a traffic agreement. The properties extend over about 3348 acres and the annual net earnings are said to be about \$556,000. The directors are as follows: Robert Mackay, Montreal; Howard Ellery Mitchell, Philadelphia; Richard V. Mattison, Ambler, Pa.; E. B. Green-shields, Montreal; Harry A. Berwind, Philadelphia; Thomas McDougall, Quebec; Theodore W. Cramp, Philadelphia; James M. Beck, New York; William McMaster, Montreal; R. H. Martin, New York; Hugh A. Allan, Montreal; C. Hartman Kuhn, Philadelphia, and H. H. Melville, Boston.

After conferences at Philadelphia extending from April 7 to 9, the anthracite coal operators and the officers of the United Mine Workers of America adjourned deadlocked. It is said on behalf of the mine workers that there will be no strike, though one of the officers of the union referred to the possibility of a lockout. The operators gave out a statement saying that in the Philadelphia conference they submitted a proposition for the renewal of the present agreement for a period of three years. They also acceded to the request of the miners that questions as to rates of payment for new work should be placed under the jurisdiction of the Conciliation Board, to determine whether the conditions of the veins and of the work are similar to those under which other portions of the mine have been worked. If so, then the rates existing in the old work shall apply to the new work. This was a matter on which the mine workers' representatives claimed that they had not been able to obtain satisfaction from the Board of Conciliation.

The E. H. Mumford Company, manufacturer of foundry molding machines, Philadelphia, Pa., has in course of construction for one of the large steel plants a new 16-in. jolt ramming machine having a cast steel table 6 ft. square, for the making of ingot mold cores, which, together with the rigging, may weigh up to 10,000 lb. A smaller Mumford machine has been making copes for these ingot molds for some time, and experimental work on the manufacture of cores by the jolt ramming process has been so satisfactory that it was decided to build one of sufficient size to take care of large work. In this connection it is interesting to note that the Mumford Company has also just taken an order for a jolt ramming machine for locomotive engine cylinder molds, weighing up to 10 tons.

**The Penberthy Engineer and Fireman**, published monthly under the auspices of the Penberthy Injector Company, Holden avenue and Grand Trunk Railway, Detroit, Mich., is an 80-page magazine of standard catalogue size. The April issue contains articles selected from 13 technical journals, interspersed with advertisements of manufacturers of engineering specialties. The subscription price is 50 cents per year.

## The Machinery Trade.

NEW YORK, April 14, 1909.

Business with machinery houses continues to expand, though slowly, and from present indications it looks as if the final upward movement had started and that trade would gradually increase until it shall become normal. With some but little improvement has as yet been noticed, but with a great majority of the more important houses the betterment is more apparent. One manufacturer states that if the volume of business so far secured since the end of March continues until the end of the month, April will be the best month of the year. Of course the amount of business being transacted is still rather light. Orders the past week were probably a little more numerous and covered a number of the heavier tools, though none of good size were reported. Quite a number of inquiries for a few tools each were received, and one is in hand from a railroad covering five or six lathes. Some of the roads have come into the market for small lots of tools and their inquiries have afforded some encouragement.

The railroads have become more active and the trade is figuring on machinery requirements for several of the roads, while some scattered buying has also been done. Among the roads which will soon purchase machinery is the Lehigh Valley Railroad, which has prepared a fair sized list of its tool requirements for its shops at Sayre, Pa.

The New York, Ontario & Western Railroad has inquiries in the market for several lathes for its shops at Norwich, N. Y. The company will probably come into the market later for considerable machinery for the new car repair shop it is to erect at Oswego, N. Y., construction of which will be started shortly. The building will be of brick and steel construction, one story, 48 x 155 ft.

The Delaware, Lackawanna & Western Railroad, in addition to buying considerable power equipment for its coal handling plants in Pennsylvania, is buying some other coal handling machinery, and has inquiries out for machine tool and blacksmithing equipment. The machine tools are for shop additions, but they are not included in the large list on which the company received bids several weeks ago.

We understand from a reliable source that the Delaware & Hudson Railroad will not go ahead with the construction of its proposed new shops at Green Island, near Troy, N. Y., until the trouble with the coal miners is settled. It is stated that as soon as a satisfactory settlement with the miners has been made by the road the directors will make the necessary appropriation and that work on the shops will then be started. It will be remembered that the road secured catalogues and other data from machinery houses some time ago to aid it in preparing a list of the machinery it will require for the new shops, and it is likely that as soon as the matter has been finally settled there will be little delay in making purchases.

The Interborough Rapid Transit Company has had inquiries in the market for some time for a few machines for its repair shop at 128th street and Third avenue. Last week this shop and the extensive barn were badly damaged by fire, and it is understood that the road will now have to purchase considerably more machinery than that covered by the inquiries. It is also thought that the fire will hasten the making of purchases and it is likely that orders will be placed shortly. The car barn covers almost an entire block, bounded by Second and Third avenues and 128th and 129th streets, and adjoining it is the repair shop, about 65 x 175 ft. Both of the buildings were of corrugated iron and one story high.

The American Laundry Machinery Company, 55 North street, Rochester, N. Y., is having plans prepared for an extensive laundry machinery plant to take the place of the several plants now being operated in various cities. The new plant is to be erected at Buffalo road and Kossuth street, Gates, N. Y., a suburb of Rochester, at an estimated cost of about \$400,000. The plant is to be one, two and three stories, of steel and concrete fireproof construction. Plans for the buildings are now being prepared by Consulting Engineers and Architects Charles F. Crandall and John F. Strobel, Jr., with offices at 400 Ellwanger & Barry Building, Rochester. Bids covering the construction and equipment of the plant will soon be called for by the owner. The plant is to cover a site of about 10 acres recently purchased.

The Vulcan Detinning Company, New York, intends to rebuild its foundry at Seawarren, N. J., which was recently destroyed by fire, the intention being to erect a plant with triple the capacity of the former one. The company will be in the market for the necessary equipment and purchases will probably include a 150-hp. boiler, 100-hp. engine, several cupolas of large dimensions, shafting, blowers, &c.

George W. Knight, supervising engineer of the Board of Education, Newark, N. J., is now planning the details for the proposed manual training school to be built in that city

at High, New and Summit streets. It has not been decided as yet just how large the power plant of the new school will be nor has the list of machinery equipment been completed. This machinery will include woodturning, foundry, forge shop and machine shop equipment.

A large plant is to be erected by the Consumers' Fertilizer Company of Maryland, which was recently incorporated with a capital stock of \$500,000 and which has opened offices in the Keyser Building, Baltimore, Md. The new company has the financial backing of the Franco-American Consolidated Phosphate Company, which was recently organized with a capital stock of \$7,500,000 and which has acquired extensive phosphate deposits in Tennessee which it will develop. The site for the new plant has not yet been selected and plans for the buildings have not yet been fully developed. It is the intention, however, to erect a main building, three stories, about 250 x 250 ft.; two storehouses, about 60 x 100 ft., and other buildings. The entire plant will occupy several acres of ground and will have a capacity of about 60,000 tons a year. William D. Wrightson is secretary.

From all accounts the International Smelting & Refining Company, whose organization was recently announced in *The Iron Age*, will be a big buying factor in the mining and smelting machinery lines for some time to come. The company is now buying for a 1200-ton smelter which it has in course of construction at Great Falls, Mont. Mr. Matthewson, of the new company's engineering force, is in charge of the work of planning the plant, and Mr. Dunlop, who makes his headquarters at Great Falls, is doing the buying. All of the purchasing will be done in the West. It is probable that later on the company will make some additions to the Raritan Copper Works at Perth Amboy, N. J., which was taken over by the new organization from the United Metal Company, but this will not be done, it is understood, in the immediate future.

### Important Hydro-Electric Development.

The Grand Falls Power Company, which is to spend about \$5,000,000 in the development of a large hydro-electric plant at Grand Falls, New Brunswick, will purchase the permanent equipment for the plant through its New York office at 542 Fifth avenue. The main power house will be equipped, when completed, with eight units of 10,000 hp. capacity each. In addition to the large amount of power equipment that will be purchased for this installation, it is likely that the company will purchase a good sized equipment of machine tools for the machine shop it will be necessary to maintain in order to take care of so large an installation of power equipment. The power plant will be situated near the Canadian Pacific Railroad, about 2 miles north of St. John and about 2 miles east of the State of Maine, and substations and long distance transmission lines will be established to distribute current in both New Brunswick and Maine. Work of construction has already been started by the contractor, Frank B. Gilbreth, 34 West Twenty-sixth street, New York, who will purchase a great deal of additional equipment for carrying out the contract. We understand that the machine tools for the contractor's repair shop will not be purchased for a month or so. Other additional equipment required for the contractor's plant consists of air compressor, electric motors, drills, tunneling machines, pumps, hoisting engine, derricks, rock crushers, &c.

Edward Joy, 133 Market street, Syracuse, N. Y., has been awarded the contract for the heating, plumbing and electric wiring to be installed in the new Onondaga Hotel to be erected at Warren and Jefferson streets. The contract includes the furnishing of all power plant equipment, including the following, for which the contractor will let sub-contracts: Three 72 in. by 18 ft. horizontal tubular boilers, 150 hp. capacity each; stokers, grate bars, breaching, &c.; large quantity of pipe covering, large quantity of sheet metal work in connection with ventilating apparatus, one 15-hp. 140-in. steel plate motor driven blower, two 20-hp. 180-in. steel plate motor driven blowers, one 5-hp. 60-in. motor driven disk fan, large quantity of pipe, valves, fittings, &c., two 7½ x 6 x 10 in. duplex steam pumps for boiler feed, two 60 x 120 x ¾ in. steel plate tanks for hot water supply, three 100-kw. 125 to 250 volt three-wire direct current generators, three 150-hp. horizontal automatic cut-off single cylinder center crank engines, for direct connection to above generators.

### Milwaukee Machinery Market.

MILWAUKEE, WIS., April 13, 1909.

A feature of the local situation is the large quantity of repair work now coming in. This not only keeps the small shops busy, particularly those devoted to custom orders, but also affects very favorably the large machinery building plants, inasmuch as work of this character keeps a relatively larger number of men employed and brings considerably greater profit than ordinary sales of new apparatus. One prominent concern here estimates that, due to repair con-



tracts, it is doing 87 per cent. of its normal business, in spite of the fact that large orders have fallen off.

The activity in power and electrical machinery, heretofore noted, also constitutes a sustaining influence, inasmuch as it involves so much auxiliary apparatus. There have grown up around the larger companies a considerable number of smaller concerns, each devoted to one or more specialties used with the former's products; consequently the prosperity of the one is almost immediately reflected by the other.

Another encouraging feature is the fact that builders of machinery used in construction work and the handling of heavy materials, such as cranes, pile-drivers, steam-shovels, dredges, breakers, concrete-mixers, &c., are sharing largely in the present activity of building operations, hydro-electric projects, maintenance work and the like.

The Bucyrus Company, South Milwaukee, has under construction two 20-in. hydraulic dredges and two elevator dredges for contractors on the Barge Canal, 3 3-cu. ft. placer dredge for the Seawell Gold Dredging Company, Kansas City, Mo., and several others, the destination of which has not been given out.

Martin's Automatic Carrier & Mfg. Company has been incorporated at Stevens Point, Wis., by L. A. Martin, B. W. Willett and Charles Hass, with a capital stock of \$10,000.

A Filer & Stowell engine is being installed by the Moore & Galloway Lumber Company, Fond du Lac, Wis.

A steel and concrete addition is to be made to the factory of the American Folding Bed Company, Sheboygan, Wis.

H. H. Held, Menasha, Wis., is organizing a company to manufacture a new patent washer.

The Aluminum Goods Mfg. Company has been granted by the town of Eagle River, Wis., free use of water power in consideration of an enlargement of the local plant.

A factory will be built at La Crosse, Wis., by the La Crosse Brick Company, recently organized.

A central steam generating plant for the three mills of the Fox River Paper Company will be built and equipped in the near future, the initial installation to consist of four boilers of 1000 hp. capacity, purchased from the Manitowoc Boiler Works.

The Pierce Motor Company, Racine, Wis., has been formally incorporated, with \$300,000 capital, and will enlarge its shops at Lakeside. Besides A. J. Pierce, Charles L. McIntosh and F. Robinson, of the J. I. Case Company, have become interested.

A pump of 1,000,000 gal. daily lift and a small electric generating unit are to be installed by the Fond du Lac (Wis.) Water Company.

Bids are being taken on a factory for the Sight Feed Oil Pump Company, to be erected on Reservoir avenue. It will be one story, with concrete foundation, brick walls, steel trusses and saw-tooth roof. Machinery now used will be installed in the new location, with some additional equipment.

The Oliver Iron Mining Company is about to install a 20 x 60 in. duplex, double-acting Corliss hoisting engine at one of its Lake Superior mines. Improvements of considerable magnitude in the aggregate are now being made at the company's mines.

A machine shop for repair work will be built by C. E. Cain, Waupaca, Wis.

L. Kissel & Sons, agricultural implement manufacturers, Hartford, Wis., are to build an addition, 64 x 180 ft.

The Bain Wagon Company, Kenosha, Wis., will install an electric generator and full line of motors, with which to operate both its old plant and an addition to be erected at once.

A brick foundry building in Milwaukee, owned by the Pfister & Vogel interests, is to be remodeled for the Petral Motor Car Company, which will move its plant from Kenosha.

Fowler & Pay, Austin, Minn., will install new cement making machinery. Five vertical kilns of steel construction have already been contracted for.

The Erd Motor Company, Saginaw, Mich., has been incorporated by John G. and Henry S. Erd and William J. Passolt, with a capital stock of \$22,000.

The Weston-Mott Company, Flint, Mich., is adding to its motor equipment.

The Nordberg Mfg. Company will put its large new foundry in operation here shortly. This is completely equipped for the present, but additional capacity will probably be needed a little later on.

A new boiler feed pump, heater and condenser will be bought for the water works at Fort Atkinson, Wis., if the recommendation of Manager H. G. D. Nutting is adopted.

A company with capital stock of \$300,000 has been formed at Eugene, Ore., by F. L. Chambers, to build a power plant on the McKenzie River, according to advices received here from the coast.

In a new plant to be erected by the Stark Motor Company, Saginaw, Mich., gas engines will be manufactured.

Four hydraulic turbines for the new power plant of the Marathon Paper Mills Company will be installed by the

James Leffel Company. Generators and exciters are to be furnished by the Allis-Chalmers Company.

A company for manufacturing cement workers' tools has been formed at Hollandale, Wis., by Q. G. Mandt, who will be general manager.

An electric power plant and hoisting machinery will be installed by the Chicago, Milwaukee & St. Paul Railroad at Tomahawk, Wis.

Two machine cutters and other apparatus will be placed in the Michigan Paper Company's mill at Plainwell, Mich. Other equipment is to be ordered later.

An hydro-electric plant to develop 4000 hp. will be built at Sandstone, on the Peshtigo River, by the Crivitz, Wis., Paper & Pulp Company.

The Grand Rapids-Muskegon Power Company, Grand Rapids, Mich., is to erect an auxiliary steam plant of 30,000 hp., the initial purchase for which will be 7000 hp. in steam turbines, with necessary boilers, feed water heaters, &c.

A brass foundry and additional repair shops will be erected by the Illinois Traction System at Champaign, Ill. Increase in the present tool equipment is required.

Frederick W. Sivy, president of the Northwestern Malleable Iron Company, will erect a steel, brick and concrete building, 94 x 150 ft., on the site of the old Bayley foundry, in Milwaukee, to be used for light manufacturing.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, April 13, 1909.

This week many of the largest machine tool bidders are in New York attending the annual meeting of the National Metal Trades' Association. April's opening was sufficiently encouraging to warrant a belief that the long stagnation in the tool trade had been broken, and the second week in some measure confirmed this feeling. One larger builder of lathes reports an excellent week, with sales of eleven tools in one day. The heavier types of milling machines are still keeping up their excellent records of sales. There is some foreign demand, but this trade is still a long way from normal. More business has come from Australia probably than any other foreign mart the past month or so.

The Industrial Bureau and other civic organizations interested are in correspondence with several Eastern machine tool manufacturers who are contemplating becoming identified with Cincinnati. Some important features of these contemplated moves will be considered during the Metal Trades convention.

The Queen City Mfg. Company, recently incorporated at Columbus for \$100,000, will soon begin operations at 40 Vine street, Cincinnati, manufacturing lubricants. The president of the company is D. Linn Gooch, former Kentucky Congressman. Joseph Glasscock, of Williamstown, Ky., a prominent banker; Robert Childers, clerk of the Circuit Court at Williamstown, and J. H. Dickey, a prominent insurance broker of Louisville, are associated with Mr. Gooch in the company.

The American Railway Industrial Association will hold its annual convention in Cincinnati, beginning May 11. Headquarters will be at the Grand Hotel. The officers of the association are: J. C. Clair, industrial agent of the Illinois Central Railroad, president; R. E. Wilson, industrial agent of the Chicago & Alton Railroad, secretary, and H. A. Truedly, industrial agent of the Baltimore & Ohio Southwestern Railroad, treasurer.

Vice President C. F. Huhlein, of B. F. Avery & Sons, Louisville, Ky., says "it is expected that specifications will be ready for bidders within 60 days and work will begin on the construction of the new plant as promptly thereafter as is practicable." The new plant will be at Seventh and Avery streets, on the Southern and Illinois Central railroads. The tract of ground is 31½ acres and the buildings will include over 500,000 sq. ft. of floor space under roof. Considerable additional space will be taken up by railroad switches, lumber yards, &c. The machinery of the present plant will be used, with some additions. "We calculate that the new plant can be completed within one year from this date," says Mr. Huhlein, "and we, therefore, can abandon our present plant at Fifteenth and Main streets about May, 1910."

Manufacturers of machine tools for making heavy iron body and globe gate valves will be interested in the rejuvenation of the old Howe Mfg. Company, Louisville, Ky. Benjamin Howe has purchased the property situated at Baxter avenue and Underhill street from the Continental National Bank, in whose hands the property has been for two years, paying about \$60,000, and will operate it as a brass foundry. The transaction involves two acres of ground, a large three-story building, covering an area of 66 x 300 ft., and three large out-buildings. It is Mr. Howe's intention to open and begin the operation of the plant by May 1. The old Howe Mfg. Company was at one time one of the flourishing brass foundries of Louisville. The foreclosure of a mortgage against the stockholders by the Continental National Bank, at that time the Western National Bank, stopped op-

erations. The plant will afford employment to 500 or more persons.

The Lunkenheimer Company, Cincinnati, is rushing to completion its large brass foundry building commenced last year. The building is of concrete construction and embodies in its architecture all the most modern and practical features known in brass foundry building.

There is a very discernible improvement in the engine and boiler trade in this section, particularly marked with builders of throttling engines and boilers. The Houston Stanwood & Gamble Company is now melting about 300 tons per month in its foundry, where something like 90 tons was the average a year ago. Business with the company is particularly good in the South.

The Inland Steel Castings Company, a corporation owned and to be operated by Chicago men, and to be incorporated under the laws of Indiana for \$50,000, will locate a plant in Terre Haute, Ind., occupying two acres of ground south of the plant of the Terre Haute Malleable Iron Mfg. Company, on North Nineteenth street. H. C. Smith, president of the Allith Mfg. Company, Chicago, is the head of the new concern.

It is reported here that the Modern Foundry & Machine Company, Paris, Ill., will remove its plant to Robinson, Ill.

### Cleveland Machinery Market.

CLEVELAND, OHIO, April 13, 1909.

Machine tool dealers still report a limited amount of business, mostly in pick-up orders for single tools. No inquiries have appeared larger than one or two for a half a dozen tools. Considerable business which has been pending for a number of weeks is still being held up until general conditions show a further improvement. The demand for second-hand tools is only fairly good, but not many used tools are being placed on the market.

With some builders of machine tools the demand shows some improvement, but with others, particularly builders of the heavier tools, no better demand is noted. With manufacturers in general in metal working lines the situation remains about stationary, few plants being operated at their normal capacity. In the automobile trade the outlook continues highly satisfactory, plants being operated at full capacity. Makers of automobile parts have all they can do and some of their plants are being run overtime to keep up with orders. With builders of heavy machinery the outlook is more promising and plants have more work on hand than for some time. Orders for locomotive cranes continue to show an improvement.

Factory building operations show a decided improvement and some of the local engineering firms have considerable work on hand in the line of additions to existing plants and the erection of entirely new plants. While few of these projects are in machinery or metal working lines, the carrying out of these projects is expected to stimulate the demand for power equipment and some lines of special machinery.

In the foundry trade, makers of light gray castings are fairly busy, but the demand for heavy castings shows little improvement. Jobbing foundries report a light demand for steel castings.

The County Building Commission will soon be in the market for the power and machinery equipment for the Cuyahoga county court house in this city. Plans have been prepared for a power plant, but the commission has decided to receive bids from commercial companies for heat and lighting before deciding definitely whether to build a power plant. The machinery equipment to be installed in the court house includes machinery for ventilation, a vacuum cleaning system and seven elevators.

The Goodrich Rubber Company, Akron, Ohio, which has added considerably to its plant in the past year, will soon begin the erection of another addition, plans for which are being prepared by the Osborn Engineering Company, of Cleveland. The new building will be 80 x 400 ft., six stories high and basement, of reinforced concrete construction.

Through the efforts of the Board of Industry of Orville, Ohio, the Service Pump Company has decided to move its plant from Sebring, Ohio, to Orville. The company, which will be furnished with a large building site on the Pennsylvania Railroad and a bonus of \$5000, will at once begin the erection of a brick, steel and concrete building, 60 x 100 ft. Later the plant will be enlarged. The company is a comparatively new concern which manufactures steam pumps. E. W. Conkell is president, E. H. Rowe, secretary, and W. A. Hammerly, treasurer.

The National Steel Products Company, Cleveland, has been incorporated with a capitalization of \$25,000 by C. S. Smith, H. L. Smith, J. R. McQuigg, J. H. Sampliner and N. K. Varnes. The company expects to engage in manufacturing, but is not yet ready to announce its plans.

The Atlantic Refining Company, Cleveland, will enlarge its plant by the erection of three buildings, contracts for which have been let. The company may decide later to erect a new power plant.

The Acme Machinery Company, Cleveland, will enlarge its plant the coming summer. Plans for the addition are being prepared by the Osborn Engineering Company. The new building will be 40 x 100 ft. and five or six stories high.

The McMyler Mfg. Company, Cleveland, reports more work on hand than for several months. The company recently received several orders for locomotive cranes.

The Iddings Company, Warren, Ohio, is erecting a new building to be used as a nickel plating department and announces that it will soon start the erection of another building to be used as an assembling room. The latter will be 72 x 36 ft., two stories high.

The City Council of Columbus, Ohio, has authorized the issue of \$45,000 for the purchase of a new generator for the municipal lighting plant.

The Rickersburg Brass Company, Cleveland, maker of plumbers' brass goods, has increased its capitalization from \$50,000 to \$100,000.

The American Spring Wheel Company, Cleveland, has been incorporated with a capitalization of \$50,000 by A. B. Williamson, H. L. Olmstead, H. N. Gillespie, Arthur J. Peet and J. H. Farnsworth.

Frazier & Fox, consulting engineers, Rockefeller Building, Cleveland, Ohio, are getting bids on equipment for two ore handling bridges, coke bins and coal handling and storing material for the Upson Nut Company, of Cleveland.

The Young-Gray Company, Toledo, Ohio, which succeeds the firm of Young & Summers, now located in suite 960 Spitzer Building, will after May 1 be established at 7 and 9 Summit street. The company is incorporated with a capital stock of \$25,000, and in addition to the sale of boilers, engines, compressors, pumping engines and general machinery as manufacturers' agents, it contracts for the erection of complete steam, air, water and heating and ventilating systems.

### Philadelphia Machinery Market.

PHILADELPHIA, PA., April 13, 1909.

A moderate amount of new work continues to crop out in different lines, and the trade expresses a more hopeful view regarding the future. Developments are still along the single tool line, for replacement and for work under contract, although a few more propositions of a moderate size are in sight. No extensive plans to branch out are expected until after the tariff question has been disposed of. Business in the anthracite coal fields has had a slight setback, owing to the inability of the operators and miners to come to some agreement as to the wage scale. The railroads still show but little inclination to come into the market as far as further machine tool equipment is concerned. Some purchases of rolling stock and motive power equipment are understood to be contemplated by some of the Eastern roads, but this does not directly benefit the machinery trade to any material extent.

Manufacturers report little change in conditions. A large number of plants were closed from Friday until Tuesday owing to the Easter holidays. Makers of the standard line of tools continue to operate on a restricted basis, but some of the special tool builders are more actively engaged and several of the smaller plants are quite busy. The textile machinery manufacturers particularly continue very busy, there being an exceptionally good demand for machinery of that class.

The second-hand machinery market reflects the general condition of the trade, and transactions have been on a comparatively moderate scale, confined closely to tools of the smaller class.

In the boiler and engine trade conditions are unchanged. There is a fair volume of business under consideration, but, except in those of the smaller class, orders develop rather slowly.

The foundry trade drags. The large steel casting plants are not running much over one-third capacity, although crucible steel plants making a specialty of automobile castings are busy. Gray iron jobbing foundries continue to operate irregularly, and the amount of business originating in the machine tool trade is small.

F. F. Slocumb & Co., Wilmington, Del., have had plans prepared by Ballinger & Perrot, engineers, for an addition to their manufacturing plant at Fifteenth and Poplar streets, in that city, estimates for which are now being taken. The new building will be 40 x 140 ft., two stories, and of the slow burning construction type.

John H. Landis, superintendent of the United States Mint, Philadelphia, will receive bids until May 11 for general supplies for use during the fiscal year, beginning July 1.

An appropriation of \$172,000 for the completion of the central power plant of the Philadelphia Navy Yard having been granted, plans for the work will be completed by the chief engineer. Estimates will be taken in the near future,



but as the appropriation is not available until July 1, it is not likely that contracts will be awarded before that date.

The Department of Supplies, Joseph H. Klemmer, director, Room 312, City Hall, is asking proposals, which will be received until April 20 for supplies for the Bureau of Fire, including chemical and rubber hose; also steam blowers for the Department of Charities.

The contract for the sewage disposal plant at Millville, N. J., has been awarded to Thomas & Watkins, Woodbury, N. J.

The Remington & Sherman Safe Company is drawing plans for a two-story brick addition to its factory at Richmond and Berks streets.

A three-story brick garage, 70 x 220 ft., will be built by James G. Doak & Co. for the estate of Wm. A. Porter, at Commerce and Urbana streets. The building when completed will, it is understood, be leased to the Woods Electric Company.

W. Hunter, chief engineer, Philadelphia & Reading Railroad, will receive bids until May 12 for the construction of further work in connection with track elevation on Ninth street between Berks and Green streets. The work is subdivided as follows: Contract No. 1, masonry, trestle and embankment from the south side of Green street to the south side of Brown street. No. 2, foundations for the steel viaduct from the south side of Brown street to the north side of Jefferson street. No. 3, bridges and viaduct ready for ballast from the south side of Green street to the north side of Jefferson street. No. 12, masonry, embankment, paving, water and drainage systems, fence and gates, new office building, scale foundation, concrete steps and pavement for yard at Master street. Plans, specifications, &c., may be obtained at his office, 520 Reading Terminal.

## New England Machinery Market.

BOSTON, MASS., April 13, 1909.

A more cheerful underlying sentiment characterizes the market, reflected largely from lines of industry other than machine tools, which have either found business improving or see the promise of better conditions in the immediate future. The dealers are experiencing the usual varying fortune in securing orders. With some of them April so far has been prosperous as compared with March, which averaged a good month under conditions as they now exist. But other dealers have not done so well in April. The steel trade shows small improvement, excepting that there appears to be increased activity in structural shapes. Woodworking machinery has been in very good demand until the past fortnight, which has seen a slight reaction, especially with machinery which goes to the lumbermen, a fact which dealers attribute to the tariff discussion affecting this commodity. But in spite of the fact that orders are not noticeably increasing there is a feeling practically everywhere that the outlook is much better than it has been; in fact, that present conditions are better than for a long time. The various causes which created and protracted the depression have been removed one after another, until there appears to be nothing but the tariff between the manufacturing industry and prosperity. Financial conditions are excellent; money is cheap and plentiful and capital has greater confidence in the various classes of investments, including industrials. The spring trade is now due, and doubtless will stimulate things somewhat. It is thought by many observers that this will be followed by the usual summer depression, but in the meanwhile the tariff revision will have been completed by Congress, so that the autumn should see the atmosphere clarified to an extent that would mean a more rapid acceleration of demand than has been experienced to date.

While there is a scarcity of first-class all round mechanics in New England considerable numbers of well trained specialists on certain lines of machine works are still idle. It is not difficult to get a good planer, lathe or milling machine hand, according to the reports of the labor bureaus. Few concerns are hiring help at this time. A number of men have been released by the Boston & Albany shops at West Springfield, Mass., the rush of freight not having been maintained.

The C. H. Bangs Drug Fixture Company, 101 Tremont street, Boston, which lost its plant at Everett, Mass., by fire, recently, is making tentative plans for the rebuilding of the factory. At present the company is occupying a building at Reading, Mass., under rental. The present idea is to erect new buildings at Everett, consisting of a main factory, probably 60 x 200 ft., two stories, and a power plant. It will be necessary to purchase engine and boilers to give about 100 hp., together with electric equipment, &c. However, nothing definite has been decided as to details, nor is it settled that the buildings will be erected this season.

The Atlantic Shore Line Railroad Company has purchased a few new machine tools for its repair shops at Kennebunk, Me.

The Bridgeport Foundry & Machine Company, Bridge-

port, Conn., has brought out a new type of molding machine, operated by compressed air, and has recently shipped a lot of the tools to Japan for installation in an important foundry.

Oliver Whyte & Co., 17 Cornhill street, Boston, has hired space in the building numbered 150 Portland street and 103 Merrimac street, and will occupy it as a factory, replacing the building at Medford recently destroyed by fire. The company manufactures ornamental metal work.

A new industry is projected for Springfield, Mass., to manufacture combustion engines to use crude oil. Details are not available, in fact final plans have not been made, but it is known that men prominent in manufacturing and business circles of Springfield and vicinity are interested financially, and will figure in the board of officers. It is stated by the local press that the company will build a plant on upper St. James avenue, adjacent to the Boston & Albany Railroad. Samuel D. Sherwood, of the firm of Cone & Sherwood, who is interested in perfecting the plans, states that nothing is yet actually under way toward the construction of the works. The published statement indicates that the plant will be a large one.

The new Bridgeport Metal Goods Mfg. Company, Bridgeport, Conn., announces that its product will be all kinds of metal goods made from sheet, rod, wire and tubing, with sheet brass in all finishes as a specialty. The plant, located at Spruce street and Howard avenue, is equipped with new machinery for the purpose. Anker S. Lyhne is the president, Frank W. Harmon, vice president; Herman K. Beach, secretary and treasurer, and Charles Phillips, superintendent. Mr. Lyhne has been associated with the Bridgeport Brass Company for 25 years, and for the past eight years has been assistant superintendent and estimator. Mr. Phillips has been with the same company for 31 years, and has for a long time been in charge of the finishing and plating departments. Mr. Harmon is well known in banking and business circles in New Haven and New York, and Mr. Beach is the son of Nelson M. Beach, late treasurer of the Bridgeport Brass Company, and was himself formerly connected with that business.

The Mackenzie Walton Company, Providence, R. I., manufacturer of seamless wire and tubing of brass or copper, is to build a new plant in Pawtucket, R. I., at Pawtucket avenue and Geneva street. The building will be 76 x 130 ft., one story, with a two story front about 40 ft. deep. Some additional machinery will be required, including rotary swedging machines and wire drawing machinery. The company makes a specialty of wire tubing for automobiles and other mechanical purposes.

Eugene Atwood, Storington, Conn., manufacturer of silk machinery, states that there is no truth in the published statement that he will establish a branch shop at Westerly, R. I.

The New Haven Clock Company, New Haven, Conn., is to erect a five story addition to its factory, to enlarge the department devoted to the Totto clock, the business of which has so increased as to compel crowding of the present quarters.

## Chicago Machinery Market.

CHICAGO, ILL., April 13, 1909.

The tenor of reports from various sections of the machinery market indicates no general acceleration in trade movements. In attempting to analyze the situation with a view to ascertaining the causes mainly responsible for the prevailing sluggishness of demand, one is confronted by a multitude of divergent opinions which are difficult to harmonize with any rational solution. The fact, however, remains that the manufacturing industries of the country are expanding very slowly, and until a more nearly normal state of activity is restored, the machinery interests cannot hope for radical improvement in the demand for their product. The machine tool houses are picking up a few orders here and there, the aggregate of which is, as a rule, not in a marked degree greater or less than it has been at any time this year. An exception to this rule is noted in a case of one dealer whose business has shown a marked increase since the first of the month; this result it may be noted, is not due to the entry of any orders of noteworthy size, but is attributable rather to a more liberal run of scattered orders, mostly for medium or small sized tools. Recent sales have, however, included a few large tools, among which was a 68 in. x 16 ft. double head planer. Three or four carloads of tools have also been shipped to Oklahoma and the Southwest, where there is some demand in a small way for new shop equipment. While inquiries have not been especially plentiful of late, there are a good many buyers visiting the market, and more than the usual proportion of sales are being made from the floor. Except for the purchase of a tool now and then, the railroads are buying nothing, nor are there any hopeful signs of a favorable change in this respect in the immediate future. Builders of small steam and gasoline engines are relatively busier than the makers of larger units. The boiler shops are uniformly quiet, so far

as new work is concerned; the majority of orders for new boilers being placed are for the replacement of worn-out equipment.

In addition to recent purchases of machine tools, including lathes, shapers and planers, that have been made for the equipment of the Salt Lake machine shops of the Denver & Rio Grand Railroad, it is stated by T. B. Purvius, superintendent of motive power, that other improvements for the betterment of the shop service are under consideration.

To take care of its expanding business, the Elgin Tool Works, Elgin, Ill., is arranging to erect a new building, 48 x 113 ft., of brick and concrete construction, with saw tooth roof. A 20 hp. water wheel will be installed to furnish power, and the plant, which will cost approximately \$10,000, is intended to be ready for occupancy September 1. The company, which is incorporated with a capital stock of \$30,000, manufactures precision machinery, bench lathes and special tools.

As a provision for future expansion, the Power & Mining Machinery Company, Cudahy, Wis., has acquired an additional tract of eight acres of land for necessary extensions and improvements to be made when business conditions warrant.

The Union Drop Forge Company, Chicago, is preparing plans for a new plant to be built on a site secured about one year ago near the northwestern limits of the city for this purpose. While the details are not yet fully worked out, bids have been taken on 800 tons of structural material to be used in the construction of the buildings. The present location at 69 Indiana street affords no room for the expansion which the development of the company's business demands. The new plant is to be modernly equipped throughout, and it is likely that additional machinery will be required.

The Whiting Foundry Equipment Company, Harvey, Ill., has appointed L. G. Henes as its representative on the Pacific coast, with offices in the Monadnock Building, San Francisco, Cal. The district embraced in the territory assigned to Mr. Henes for the sale of cranes and foundry equipment includes California, Nevada and Arizona.

Having secured a franchise from the town of Yacolt, Wash., the Coulter-Watrous Lumber Company will begin the construction of an electric light plant early in July, to be completed by September 1. For the present, steam for the operation of the engines will be supplied from the saw mill boilers, but if the demand for light and power increases it is likely that an available water power will be developed later on.

The Pierce Motor Company, Racine, Wis., has recently been incorporated to acquire the business of the Pierce Engine Company, which it will succeed in the manufacture of automobiles and motor boats. The new company will enter the field with ample resources, and expects to expand the business much beyond its present limits. To this end plans are under way for the construction of new buildings and the enlargement of equipment by the purchase of such tools and machinery as will be needed in the requirements of enlarged capacity. Included in the directory of the new company are: Frederick Robinson and C. L. McIntosh, vice-president and treasurer, respectively, of the J. I. Case Threshing Machine Company.

## Government Purchases.

WASHINGTON, D. C., April 13, 1909.

The Isthmian Canal Commission will receive bids until May 6, Circular No. 503, for semi-marine boilers, air compressor, electric motor, motor driven wood working machines, machine shop machines, tin and coppersmith tools, &c.

The Isthmian Canal Commission will soon ask bids for six duplex boiler feed pumps and other supplies.

The following bids were opened April 3 for item 4, six force pumps for the Isthmian Canal Commission:

Goulds Mfg. Company, Seneca Falls, N. Y., \$92.40; National Electrical Supply Company, Washington, D. C., \$92.12.

The following bids were opened April 6 for machinery for the navy yards:

Class 51.—Two Pratt & Whitney new model engine lathes—Bidder 76, Fairbanks Company, New York, \$1010; 90, Hendey Machine Company, Torrington, Conn., \$1135; 144, Manning, Maxwell & Moore, New York, \$1118; 174, Pratt & Whitney Company, Hartford, Conn., \$1361.

Class 52.—One Stockbridge two-piece adjustable crank shaper—Bidder 76, Fairbanks Company, New York, \$673; 144, Manning, Maxwell & Moore, New York, \$635; 163, Niles-Bement-Pond Company, New York, \$750; 183, Queen City Machine Company, Cincinnati, Ohio, \$700; 265, Gould & Eberhardt, Newark, N. J., \$715.

Class 53.—One Stockbridge two-piece adjustable crank shaper—Bidder 76, Fairbanks Company, New York, \$500; 144, Manning, Maxwell & Moore, New York, \$449; 163, Niles-Bement-Pond Company, New York, \$465; 183, Queen City Machine Company, Cincinnati, Ohio, \$500; 265, Gould & Eberhardt, Newark, N. J., \$418 and \$500.

Class 61.—One Tabor universal tool grinding and shaping machine—Bidder 205, William Sellers Company, Philadelphia, Pa., \$1015; 220, Tabor Mfg. Company, Philadelphia, Pa., \$1058.50.

Class 63.—Five complete turret turning equipments, five complete mechanical variable speed geared equipments and five

electrical sets—Bidder 20, Cutler-Hammer Mfg. Company, Milwaukee, Wis., \$5300; 78, General Electric Company, Schenectady, N. Y., \$7650.

Class 71.—Three ash hoisting engines—Bidder 98, Hyde Windlass Company, Bath, Me., \$425; 243, Williamson Brothers Company, Philadelphia, Pa., \$375.

Class 151.—Seven induction motors—Bidder 78, General Electric Company, Schenectady, N. Y., \$610.95; 126, Lincoln Electric Company, Cleveland, Ohio, \$707; 251, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., \$643; 254, Western Electric Company, New York, \$609.25.

Bids were opened as follows April 2 by the Isthmian Canal Commission, under a circular bulletin for furnishing one refuse conveyor:

Atlas Car & Mfg. Company, Cleveland, Ohio, \$2773. Cleveland Crane & Engineering Company, Wickliff, Ohio, \$4716. Jeffrey Mfg. Company, Columbus, Ohio, \$2850 and \$3610. Link-Belt Engineering Company, Chicago, Ill., \$5100 and \$4990. Manning, Maxwell & Moore, New York, \$4487 and \$3914. Stephens-Adamson Mfg. Company, Aurora, Ill., \$4946.45.

The following bids were opened on April 3 for a 50-kw. engine driven generating equipment for the naval station, New Orleans, La.:

Item 1, net price for engine driven, generating set complete with accessories in accordance with specification; 2, under this item bidders may submit proposals for the complete work in accordance with the spirit of the specification, but with such modification of methods and details as they desire, provided all such modifications are fully specified or indicated upon plans accompanying the proposal.

Fort Wayne Electric Works, Fort Wayne, Ind., item 2, \$1992. Westinghouse Electric & Mfg. Company, Baltimore, Md., item 2, \$3274.

General Electric Company, Schenectady, N. Y., item 1, \$3227; 2, \$4200.

Under bids opened March 22, the De La Vergne Machine Company, New York, has been awarded contract for two 15 hp. Hornsby-Akroyd oil engines and compressors for the light house station at Cape Henry, Va., at \$3270.

Under bids opened February 2 for machinery for the navy yards, the Lincoln Motor Company, Cleveland, Ohio, has been awarded class 52, one electric motor, \$245.

The Hall Signal Company, Pittsburgh, Pa., has been awarded class 82, one cross compound air compressor, \$3000, under opening of February 9, for machinery for the navy yards.

The Whiting Foundry Equipment Company, Harvey, Ill., has been awarded class 32, one special foundry crane, \$1130, under bids opened February 23, for machinery for the navy yards.

Under opening of March 16 for machinery for the navy yards, the Davis-Bournonville Company, New York, has been awarded class 161, one No. 1 oxy-acetylene welding plant, \$650.

Under bids opened March 30 for machinery for the navy yards, the Tabor Mfg. Company, Philadelphia, Pa., has been awarded class 1, one universal tool grinding and shaping machine, \$1150.

## The Northern Equipment Company's Expansion.

It is announced that the American Boiler Economy Company, Philadelphia, manufacturer of the Copes boiler feed regulator and the Copes pump governor, has been consolidated with the Northern Equipment Company, Old Colony Building Chicago, Ill., which assumes all obligations of the former company, including guarantees to replace free of cost any part of any Copes regulator that may develop a defect within five years from the date of purchase. The district offices of the American Boiler Economy Company in the Tribune Building, New York; Oliver Building, Boston; 226 East Pleasant street, Baltimore, and the Frick Building Annex, Pittsburgh, will be continued under the style of the Northern Equipment Company, while the sale of Copes regulators will be handled in Philadelphia by the Adjustment Grate Bar Company, North American Building.

## Iron Ore Imports by European Countries.—Winston Churchill, president of the British Board of Trade, recently published the following statistics giving in gross tons the importations of iron ore by the countries named in the past three years:

	1908.	1907.	1906.
United Kingdom.....	6,057,000	7,642,000	7,823,000
Germany .....	7,609,000	8,340,000	7,507,000
France .....	1,431,000	1,967,000	1,983,000
Belgium .....	3,292,000	3,784,000	3,683,000

The Cambria Steel Company's new 8-in. mill, which will be ready for operation by May 1, will double the output of rounds and squares, 1/4 to 11-32 in.; flats, 3/8 to 3/4 x 1-16 to 3-16 in., and small shapes. Rolls for octagon shapes have just been completed, and sizes from 5-16 to 1 in., inclusive, varying to 1-16 in., can be furnished.



# HARDWARE

ONE of the difficulties of the Hardware dealer in a small town arises when the grocer puts in a stock of cheap Tinware or Kitchen Utensils, to be sold at cut prices as "bait" to attract grocery trade. It is an uncommercial practice for any merchant to poach on the trade of his neighbors by making "bait" of their established lines of merchandise, but there is no law to prevent it and it is a practice of frequent occurrence. The Hardware dealer cannot retaliate by advertising a bargain counter of groceries, and even if he could a little commercial war of this kind is just as unprofitable as a great war between two nations. The retail Hardware trade suffers more than any other line of business from "poaching," because the Hardware dealer carries so great a variety of articles, as necessary and legitimate features of his stock, which offer temptations as side lines for a grocery or some other store.

Many successful merchants meet these attacks on the plan of fighting fire with fire. There are jobbing houses, selling to the trade exclusively, which make a specialty of cheap bargain counter goods, and a window display or a bargain counter at lower prices of the same articles offered by the grocer has the effect, at least, of checking the grocer's raid on the Hardware business. In many cases this method can be adopted to make it uncomfortable and unprofitable for one's neighbors in other lines of business to engage in an uncommercial practice. It has the serious disadvantage that a Hardware dealer cannot afford to go very far in the direction of selling cheap, trashy goods. There is no other store from which people expect so much in the way of quality as they demand from the Hardware store. Selling goods of the best quality at a fair price is the safest foundation, in Hardware at least, on which to build up a profitable trade. The customer who takes home something cheap or inferior may forget that he got it at a bargain, but he never forgets that it was a poor article. He makes allowances in this respect for the department store or catalogue house, but would not forget it if a Hardware merchant sold it to him. This peculiar trait in human nature makes it necessary for the Hardware dealer to go cautiously in meeting the competition of "poachers."

An excellent way to handle this and many other difficult matters in a small town, and sometimes in a larger town, is for the retail merchants to have a friendly club or association where they meet frequently on common ground to promote the interests of their city and discuss proper means of protection against abuses of credit or competition and to cultivate a public spirit. When the grocer finds that the Hardwareman and the dry goods merchant are willing to help him in little things he will listen in a more kindly spirit to a suggestion that he should not trespass on the rights of his neighbors. The most prosperous and progressive towns, other things being equal, and those in which individual merchants are most prosperous, are those in which the business men work together in a spirit of harmony and good will to promote their common interests.

## Condition of Trade.

The trade are learning to accept the unsettled state of the market and questions as to the probable course of business and the movement of values, as a condition of which they are to make the best until the anticipated change for the better takes place. In carrying on business under these conditions each great class in the trade has its own peculiar difficulties, but it is undoubtedly by the manufacturer that the perplexities and problems of the situation are most seriously felt. The retail merchants have comparatively fair sailing, as they can readily purchase such goods as they require from either the jobber or the manufacturer, as may be most advantageous, without attempting to forecast the future or being obliged to contract beyond their needs. The jobbers, too, while obliged to anticipate the demands which will be made upon their stocks, have the advantage of being able to replenish them promptly, as most manufacturers are in a position to make prompt shipments. With the manufacturers, however, there are obviously graver problems to be solved, as they have to determine their policy for a considerable time ahead and to take many chances in regard to the course of the market for raw material, as well as for the finished product. In the present state of things they have an opportunity to accumulate goods in their warehouses, which relieves them from some of the annoyance attendant on the transaction of business during the years when their capacity was overtaxed, but the fact that so many small orders are received adds not a little to the labor and expense of doing business. The trade generally, whether manufacturers or distributors, are still pursuing their policy of conservatism and endeavoring to avoid the accumulation of heavy stocks in view of the uncertainty in regard to the maintenance of existing prices. The volume of business gives, however, little ground for complaint, as most of the merchants, both wholesale and retail, recognize the wisdom of keeping stocks well assorted so as to be able to take care of current business.

### Chicago.

Although the situation marketwise has not been materially modified by any developments of the past week in the Hardware trade of a nature to excite enthusiastic comment, it is nevertheless true that there are no signs of shrinkage in the general volume of business. Orders were perhaps never more plentiful than they are now, but owing to the unaltered policy of buying only for present needs they are individually much below the ordinary average in size. This, of course, means that instead of the usual proportion of full packages included in an order, a greater percentage of the items specified calls for the breaking of original bulk. The extreme conservatism thus displayed by buyers is characteristic of the trade all along the line from retailer to manufacturer, and entails upon the latter, and the jobber as well, a large amount of extra work in the handling and shipment of goods. It is also responsible to some extent for occasional delay in the execution and shipment of orders, especially from factories whose stocks are not adapted to the supply of a hand to mouth demand. This is notably the case in Builders' Hardware, the makers of which are being importuned for prompt shipment of small assortments which must often be made to order. Nails and other Wire products are moving strictly in accordance with the requirements of actual consumption, which is fairly heavy. Distrust of the permanency of the present price level prevents buying in advance of immediate

wants by distributors, but whether consumers are restricting their purchases in like manner and for the same reason is not apparent. Influenced by the lower trend of iron and steel, Cut Nail prices show a yielding tendency and the regular quotations are being shaded more or less, according to the size of orders and desirability of specifications offered. Of values as a whole, it may be said that they are gradually settling to a more uniform basis, which for the majority of lines will, it is believed, not occupy a level much below that already reached.

#### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—March was a very good month, but an analysis of sales—by States—indicates the largest increases were made in the corn, wheat and hay growing States. These States are getting high prices for their products and business is evidently very good with the retail merchants. Where they depend upon cotton and lumber business is not so good. Cotton is low and the lumber business has been in the "doldrums." In the gold and silver mining States business is good, but where they mine copper, lead and zinc business is off. Some parts of the Southwest have not had enough moisture and a droughty year is feared.

We have now reached that season of the year when we will have our "ups" and "downs" from crop reports. In this immediate territory the weather so far has been very seasonable—we have had no warm spells followed by heavy frosts. Therefore we look forward to a good fruit crop this year, but we are not yet "out of the woods."

Prices in the Nail and Wire market are being very well maintained, but secret cutting is in evidence. It is apparent there is a lack of confidence by some jobbers in the present situation and that they are quietly getting business by concessions. It is unfortunate, or fortunate—according to the point of view—that certain jobbers have a penchant for using Nails and Wire as a leader to secure other business.

The State Legislators are now getting busy with Revolvers. Iowa is about to pass or has passed a bill taxing retail dealers who handle Revolvers from 25 to 50 per cent. on such sales. A bill recently passed the Senate of the Missouri Legislature which forbids exposing to the public, for sale, Revolvers, Dirks, Billies, Sword Canes and other such weapons in show cases or show windows. Several gentlemen connected with the Hardware trade of St. Louis journeyed to Jefferson City and the House amended the Senate bill to read that such goods could not be displayed in show windows exposed to the street, but could be shown in cases inside the store.

All such legislation seems to be particularly hard upon the jobber and the local retail merchant, in light of the fact that there are no restrictions whatever upon the sale of Revolvers by the Chicago catalogue houses. The average Revolver weighs 12 ounces, and it can be mailed to any part of the United States for 25 cents. Notwithstanding drastic Revolver legislation, such for instance as in Texas, any individual in that State who desires a Revolver has simply to send the price to a catalogue house and the Revolver comes by return mail.

It does seem ineffective for States to attempt to restrict the sale of Revolvers. This question can only be handled in a satisfactory manner by national legislation.

It also seems to be a fact that State anti-trust legislation, such as the laws against insurance companies in Arkansas, and the anti-trust and Revolver laws in Texas, in the end fall hardest upon their own citizens doing business within their own borders.

#### Cleveland.

W. BINGHAM COMPANY.—We have nothing new or startling to report at this time. The general Hardware trade in all of its branches is quite good with our merchants in the farming districts, but manufacturers, railroads, mines and mills are buying only sparingly at present, probably waiting for the tariff bill to be settled; at least that is the only excuse that we can give for their not buying more freely at the present time. They certainly will need goods of all kinds, and when they do commence to buy they may find a shortage on hand with

the manufacturers as well as the dealers, for none of them are piling up goods at the present time.

Prices on Nails, Plain and Barbed Wire, and other staple commodities are steady; the cut in price that was indulged in by a few scared dealers has subsided and prices in these lines seem to be in their normal state. Spring goods are moving forward in good volume.

Our sales of Manila Rope have been larger from this market than any previous year in our history. Why? Because the quality of Rope that is sold from this market is known to be of the best; it is Rope made of new, pure, long fiber, Manila hemp, and at the reasonable price which we have sold it, our customers have been willing to place their orders early and have taken it into stock. There is a lot of cheap, low grade Manila Rope on the market that is called pure Manila. Well, it is pure Manila, but is made of old hemp, dry and brittle. Then there is a lot of mixed Rope, that is, Manila and New Zealand hemp; it is good looking Rope, but what reputable dealer wants to sell that kind of stuff? Most of it is used for Hay Rope, and suppose a dealer sold a farmer 200 ft. of this poor, pure dried hemp, mixed stuff to use in loading hay, and the farmer's boy should be under the load and the rope should break and kink the boy's neck, or perhaps kill him, how could the dealer who knowingly bought this poor cheap Rope ease his conscience for selling such stuff? As there is only about 1 cent a pound difference, why not buy the best?

This same comparison is also true of Solder. We sell Solder made of new virgin metal; that is, pig lead and pig tin that is only melted once. Our Warranted  $\frac{1}{2}$  and  $\frac{1}{2}$  Solder is made of this new pure lead and pure tin, and Solder made of this quality of metal will always flow satisfactorily; that is, follow the Soldering Iron, and will be soft and pliable when applied to roofing tin. Solder made of this quality of metal does not expand or contract from cold in winter or the heat in summer. Now there is a large amount of Solder on the market that is made of half tin and half lead, but where do the makers get it? They get the tin by melting it off old tin cans and scrap tin, and they get the lead by melting up old lead pipe, junk, waste lead, or all kinds of second-hand tin and lead, and they are obliged to use such a fierce heat in separating these two metals from the foreign substance that the junk contains, that the life is burned out. If you make Solder of lead and tin that is collected in this way, it is true you have Solder made of half old tin and half old lead, but what good is it? This lead and tin has been melted by such a strong heat so many times that the flowing qualities are almost gone, and when you apply this kind of solder to roofing plate, the hot and cold weather is apt to expand and contract your plate and crack your Solder and your roof leaks at the joints. Why not pay a few cents more for strictly first-class goods and keep out of this trouble? What does it profit a merchant to gain a lot of trade and lose his own reputation?

#### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The clearing house reports would indicate that the main business nowadays is trading in securities or in figuring on financial operations purely, for the merchandise is not moving in the volume that would seem to correspond to clearing house results. Last week's, for example, are 5 per cent. ahead of two years ago, when we were in the midst of flush times, and 50 per cent. over last year. The writer must revert to a previously broached theory that after two or three years of prosperity in the early part of the century the people provided themselves with what they needed, and there can be no such eager buying as in the period of recovery from depression and depletion. Then people bought more than they really needed, and we must wait until their wardrobes, kitchens and implement sheds get thinned out and the time comes along again when it is a pleasanter sensation to part with one's wad than to hold onto it.

All farm products are still climbing—note wheat and potatoes and apples, chickens and mules—and are so remunerative that the farmer or stock breeder finds himself affluent, and the only thing likely to bring down his



gray hairs with sorrow is an occasional bank failure. We have just had a trial in this State of bankers, one of whom has been sentenced to five years in the penitentiary, which is regarded by most people as a healthy sign of justice prevailing in the end.

There is a good deal of labor offering, but at the same time there is much doing in the way of municipal improvement, in the construction of streets, digging sewers, &c., and this is supplemented by work of public corporations putting wires under ground, extension of suburban lines, elevating tracks, cutting underpasses, &c. The columns in the newspapers of help wanted are beginning to swell, while those with situations wanted, a short time since so unhappily long and full, are shrinking to a corresponding degree. The fact that an undue proportion of the calls is for barbers and bushelmen would go to indicate that Johnnie was having his hair cut for Easter, to say nothing of the demand made on last summer's clothes for cleaning and pressing, sometimes designed to make his trousers shrink, so that there would be more seen of the fancy hose over his pigeon-toed shoes.

Of course the country is reading with much interest of the proceedings in Washington. In nothing can there be greater diversity of opinion or bitterer discussion than over the tariff. The country at large, however, does not seem to be as much disturbed as over local happenings. Give us peace and economy and we care not overmuch who makes the tariffs.

One thing, however, we would put in our vote for, and that is to take the money which has been appropriated for building more war vessels of the Dreadnought type, which, by the way, are out of style just as certainly as last year's hat, before they are ever finished. Take these millions and subsidize for the time being a line of ships in regular merchant service to South America. Let's see if it does not pay better to have our own ships faring forth under our own flag. The warships take some of the choicest physical specimens of young men out of business and other professions incident to civil life and carry them

away from home. The other plan would encourage our commerce as nothing else has done for near a century, and if we may have this peaceful commerce over all the seas we shall not have so much need for Dreadnoughts. We have shown what we could do when necessity arises. We have with our warships circumnavigated the globe without mishap. Now let us see what it means to start the cargoes from our own ports rather than from Southampton or Liverpool.

### Omaha.

LEE-GLASS-ANDRESSEN HARDWARE COMPANY.—Trade conditions in the Trans-Missouri region continue fully as satisfactory as embodied in our former reports. Business in all lines is flourishing and the volume of goods daily going into consumption continues steady. In practically every part of this section of the country evidence of prosperity is apparent in the shape of new buildings and general betterment. The whole Western country is in good condition financially, and outside of a little annual uncertainty as to the extent of the coming season's crops there are no developments in sight calculated to disturb the present satisfactory volume of business. All indications point to an increased demand for goods as soon as the present cool and blustery weather leaves and balmy spring conditions are in evidence.

### Portland, Ore.

FAILING-McCALMAN COMPANY.—The further we get into the year 1909 the better we think it is going to be. Since spring opened up business has improved tremendously, and it was already more than fair.

Our trade in all sections of our territory is good, excepting only those towns wholly dependent upon lumbering. Here the uncertainty with regard to the tariff continues to have a bad effect on all classes of trade. This, however, has not prevented us so far this year from doing the largest business in our history. When I say "us," I mean all the Hardware jobbers in this city.

We out here, on account of our small population and

### CONTENTS.

	PAGE.
New Flather Shapers. Illustrated.....	1187
High Speed Hydraulic Forging Presses. Illustrated.....	1188
The Hadfield's Steel Foundry Company.....	1189
Lake Champlain Iron Ores.....	1189
Ore Distribution at the Base of the Blast Furnace. Illus.....	1190
A Chicago Special Train for the Foundrymen's Convention in Cincinnati.....	1191
An Improved Kidder Boring Machine. Illustrated.....	1191
Cylinders Repaired by Autogenous Welding. Illustrated.....	1192
The Marvel No. 2 Hack Saw. Illustrated.....	1194
The Seabrook-Box Differential Car Axle. Illustrated.....	1194
The Philadelphia Foundrymen's Association.....	1195
The Webco Pipe Union. Illustrated.....	1195
A 200-Ton Fairbanks Track Scale. Illustrated.....	1196
The Nelson Combined Ratchet Drill and Wrench. Illus.....	1197
The Rothchild Steam Engine Valve. Illustrated.....	1198
Steel Production in Germany in 1908.....	1199
The Electric Production of Pig Iron.....	1199
The Benefits of Protective Duties.....	1200
The Glasgow Award to the Lorain Steel Company.....	1201
Hart's Buckeye Ratchet Handle Die Stock. Illustrated.....	1201
The Senate Substitute Tariff Bill.....	1202
Legal Decisions in the Iron and Hardware Trades.....	1207
Stocks of Copper and March Production.....	1207
Charles H. Warren's Retirement.....	1207
Editorial:	
International Industrial Comparisons.....	1208
The Tie Plate and the Steel Tie.....	1208
Government Standards for Machinery.....	1209
Correspondence.....	1210
The Payne Tariff Bill Passes the House.....	1211
Steel Rail Business and Prospects in Canada.....	1213
John Fritz Medal Presented to Charles T. Porter. Portrait.....	1214
British Iron and Steel Markets.....	1214
Personal.....	1215
Obituary.....	1215
The National Metal Trade Association.....	1216
News of the Works:	
Iron and Steel.....	1217
General Machinery.....	1217
Foundries.....	1217
Power Plant Equipment.....	1217
Bridges and Buildings.....	1217
Fires.....	1217
Hardware.....	1217
Miscellaneous.....	1217
Trade Publications.....	1218
The Cleveland Industrial Exposition.....	1218
The Iron and Metal Trades:	
A Comparison of Prices.....	1219
Prices of Finished Iron and Steel, f.o.b. Pittsburgh.....	1219
Chicago.....	1220
Buffalo.....	1221

Philadelphia.....	1222
Birmingham.....	1222
St. Louis.....	1223
Cincinnati.....	1223
San Francisco.....	1224
Pittsburgh.....	1225
Cleveland.....	1226
The German Iron Market.....	1227
Metal Market.....	1228
New York.....	1228
Iron and Industrial Stocks.....	1229
The Consumption of Iron and Steel Scrap.....	1229
Dunbar Furnace Output Correction.....	1229
The Ingersoll-Rand Company's Annual Report.....	1230
The Steel Ore Dock at Two Harbors, Minn.....	1230
Asbestos Producers Consolidate.....	1230
The Machinery Trade:	
New York Machinery Market.....	1231
Milwaukee Machinery Market.....	1231
Cincinnati Machinery Market.....	1232
Cleveland Machinery Market.....	1233
Philadelphia Machinery Market.....	1233
New England Machinery Market.....	1234
Chicago Machinery Market.....	1234
Government Purchases.....	1235
The Northern Equipment Company's Expansion.....	1235
Iron Ore Imports by European Countries.....	1235
Hardware:	
Condition of Trade.....	1236
Notes on Prices.....	1239
Spring Catalogue of an Illinois House.....	1241
Among the Hardware Trade.....	1242
Spring Garden Goods Window. Illustrated.....	1243
Fancy Ware Display.....	1243
Causes and Prevention of Fires.....	1244
Coming Hardware Conventions.....	1244
The Question Box.....	1245
The Pittsburgh Conventions.....	1247
Making Good in Business.....	1248
Requests for Catalogues, &c.....	1248
L. & I. J. White Company's New Catalogue.....	1248
Price-Lists, Circulars, &c.....	1249
F. E. Kohler & Co.'s Drain Cleaners.....	1249
Lawn Mower Grinder. Illustrated.....	1249
Rochester Keyless Automobile Lock. Illustrated.....	1249
Draftsmen's Protractor. Illustrated.....	1250
Diamond Hay Tools.....	1250
White Frost Refrigerator. Illustrated.....	1250
F. and R. Auto and Motor Boat Vise. Illustrated.....	1250
Combination Belting.....	1251
The H. B. Fishing Tackle Box. Illustrated.....	1251
The Hummer Washing Machine. Illustrated.....	1251
Free Spool Fish Line Reels. Illustrated.....	1252
The Yankee Carpet Stretcher and Tack Holder. Illus.....	1252
Marble's Game Getter Gun. Illustrated.....	1252
Bottle Cap Lifter Pocket Knives. Illustrated.....	1253
The Gem Carpet Beater. Illustrated.....	1253
Current Hardware Prices.....	1254

consequent small representation in the lower branch of Congress, seem fated to be the sacrifice to the tariff reform agitation, for as near as one can find out from the daily press it is the productions of the West and the Pacific Coast which are being left without protection. This will compel our producers to compete with outsiders, while for those goods we consume we are to be compelled to pay a high tariff made price. Of course I believe that, considering our natural advantages, the Pacific Coast can stand this kind of treatment better perhaps than any other section of the country. At the same time, it certainly does not please our people. We hope, however, that when the bill goes to the Senate we will get a fair show compared with the rest of the country. We do not much care whether this fair show consists in a general reduction to correspond with the reduction of duty on our products already made or an increase in the duties on our products to keep them even with the products of the rest of the country. Nothing truer was ever said in politics than that "The tariff is a local issue," and this certainly seems to be proved beyond question by the action of our representatives at this time.

But, any way, we believe that the country is on a sound basis in a business way, and will continue to go ahead regardless of the gallery plays of the politicians. We know this to be true of the North Pacific Coast.

### Philadelphia.

**SUPPLEE HARDWARE COMPANY.**—That business conditions in this territory are being greatly influenced by the tariff tinkering at Washington is clearly evident. All other conditions seem normal, unless it is true, as urged by some large manufacturers, that liquidation has occurred in everything except labor, and that even after the tariff is readjusted it will be necessary to fix new labor cost before any real prosperity can come. We incline, however, to the belief that wages are about as low as they are likely to get, and that all that is needed is confidence and a certain knowledge of the effect of the new tariff legislation. This uncertainty reaches into all classes of business enterprise, and capital, which is notoriously cautious and conservative, is staying out of action even in small enterprises, waiting for the example of large corporations like railroads for their cue.

A large volume of business is being done in small amounts. Orders are more frequent from our customers, indicating, we think, a larger dependence on the jobber than for some years past, and also showing that stocks everywhere have been reduced to an extent compelling a hand to mouth business. A final settlement of tariff matters would undoubtedly restore confidence. There seems to be no other cloud in the sky and nothing that can interfere with the onward movement of trade.

Locally there is great activity in the real estate market. A very large number of new dwellings have been contracted for, both in the city and suburbs, operators finding the present conditions more favorable for building than in the past few years.

### Nashville.

**GRAY & DUDLEY HARDWARE COMPANY.**—Business with the Hardware jobbers in this section is only fairly good at present. January was a splendid month, as was also February. March was not quite so good, although all three of these months showed a handsome increase over the corresponding months of last year. April will be much better than last year, but still not back to old times. We don't notice any special demoralization in prices, which are firmer than we had anticipated. During the last few days some very large contracts have been placed for Southern pig iron, and we think the bottom has been reached and we would not be at all surprised to see an advance in iron. Nails, Wire, Hinges, Bolts and many lines of this kind are in very good demand, and little or no concession in prices can be obtained. Prospects for future business are not bad.

While we don't look for a heavy business in the next 90 days, we do anticipate and are preparing for a heavy fall trade. If the South has fairly good crops we believe business in the South next fall will be a record breaker, not only in Hardware but all other lines. Discussion of

the future crops is already in order. In this vicinity wheat and oats are looking unusually well. Spring plowing is being pushed vigorously and more corn is being planted this spring than ever known before in this territory, and the sale of Corn Planters has been unprecedented. Our collections are remarkably good for this time of the year.

## NOTES ON PRICES.

**Wire Nails.**—While there is no open change in the prices ruling for Wire Nails and Wire, there have been many rumors of the creeping in of irregularities, which are probably based on the making of slight concessions here and there and a less inflexible maintenance of established quotations. Under these circumstances the differential between the jobbers and the retailers is not at all rigidly adhered to, especially by the smaller mills, who are looking for business a little more aggressively than a few weeks ago. While the general price on Nails and Wire Products is surprisingly well maintained, the market is not so uniform or the tone quite so firm as a week or two ago. Some jobbers are also selling at cut prices, a fact which has its influence on the market at large. The volume of business with the manufacturers is very satisfactory, notwithstanding the caution with which the trade are purchasing. Quotations, which may in some cases be shaded slightly, continue as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$1.95
Carload lots to retail merchants.....	2.00
Less than carloads to jobbers.....	2.00
Less than carloads to retail merchants.....	2.10

**New York.**—The distribution of Wire Nails from store is in fair volume, though for the most part in small lots. Merchants continue to buy cautiously, owing to doubt as to the future stability of the market. In small lots at store Wire Nails are held at \$2.25 per keg, base, which price is not uniformly maintained by some sellers.

**Chicago.**—Notwithstanding the persistent reports of increasing laxity in the maintenance of Wire Nail prices, we are advised that the situation is not sensibly changed and that the regular schedule is being adhered to with reasonable firmness by all of the leading producers. Owing to the policy of buying in small lots to meet current requirements, which continues to be closely followed by the trade, quick shipment is an important factor. This requirement is being met by distribution from mill warehouses in various parts of the country. For this reason mill shipments are of less volume than would otherwise be the case. All things considered, new business and specifications are fairly satisfactory. Quotations are as follows: \$2.13 in car lots to jobbers, and \$2.18 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

**Pittsburgh.**—In the past two or three days prices on Wire Nails have materially weakened and to the large trade the leading mills are offering Wire Nails on the basis of \$1.90, f.o.b. Pittsburgh; but the market is not very firm at that price, and it is possible it is being slightly shaded in a few exceptional cases to the very largest jobbers. It has been recognized for some time by both the mills and the trade that a readjustment in prices of Wire Products would probably be necessary in the near future, and the course of the market in the last few days would seem to indicate that this readjustment may be made before very long. The decline in price is not sufficient to cause the large trade to place contracts, but, instead, orders coming in, while plentiful, are only for small lots to meet current needs. This condition will likely continue until there is an official readjustment in prices, as jobbers do not show any disposition to buy ahead in the present uncertainty of the market. We quote Wire Nails on the basis of \$1.90 to \$1.95, f.o.b. Pittsburgh, in carload lots, and 5 cents more in less than carload lots, but in very exceptional cases, and to the largest jobbers, it is possible the lower price is slightly shaded.

**Cut Nails.**—No marked decrease in demand is noted, while orders received by the mills continue to be for



small lots. Regular quotations are unchanged, these being shaded from 5 to 10 cents per keg. Steel Cut Nails continue to be regularly quoted at \$1.80, base, per keg, f.o.b. Pittsburgh, for carloads, but this price is frequently shaded from 5 to 10 cents. Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails in the Western market, but in the East this differential is not observed.

**New York.**—An increase in demand for Cut Nails is noted, although requirements are conservative. In small lots at store Cut Nails are held at the base price of \$2.05 per keg.

**Chicago.**—As the season advances and the activity in building trades increases the consumption of Cut Nails is bound to grow. The effect of this influence is seen in a gradually improving demand which, however, is confined to the conservative buying of small lots for moderate use. Regular quotations which are subject to a shade of 10 cents a keg are as follows: In carload lots to jobbers, Iron Cut Nails, \$2.08; Steel Cut Nails, \$1.98.

**Pittsburgh.**—The market continues quiet and in view of the weakness in prices of Wire Nails it is not unlikely makers of Cut Nails will also adjust prices to meet the new conditions. New orders being placed are only for small lots to meet current needs. While the regular price of Cut Nails is \$1.80, Pittsburgh, this price is being shaded at least 10 cents a keg and possibly more.

**Barb Wire.**—Buying is confined mostly to small lots to meet near-by requirements, as the uncertainty regarding future market prices continues. Quotations, which are on the whole well maintained, are on the following basis, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.10	\$2.40
Retailers, carload lots.....	2.15	2.45
Retailers, less than carload lots.....	2.25	2.55

**Chicago.**—With the Fence building now in full swing in the West and Northwest new orders for Barb Wire, reflecting this activity, have improved considerably. While prices are still being held with reasonable uniformity, buyers are carefully guarding against extending their purchases beyond the present needs of consumption. This applies with equal force to jobbers and retailers, since the feeling prevails that sooner or later a revision of prices may reduce values to a lower level. Prices are being held with satisfactory regularity. Quotations are as follows: Jobbers, Chicago, car lots, Painted, \$2.28; Galvanized, \$2.58; to retailers, car lots, Painted, \$2.33; Galvanized, \$2.63; retailers, less than car lots, Painted, \$2.45; Galvanized, \$2.75; Staples, bright, in car lots, \$2.25; Galvanized, \$2.55; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Pittsburgh.**—The conditions referred to in Wire Nails in this report apply equally well on Barb Wire. The leading makers are giving the larger trade a reduction of \$1 a ton, and in special cases possibly a little more. New buying is only fair and is mostly in small lots to meet current needs, as jobbers and consumers alike will not buy ahead, while the present uncertainty as to the future of price continues. We quote Painted Barb Wire to jobbers in carload lots at \$2.05, and Galvanized at \$2.35, but in exceptional cases slightly lower prices might be named.

**Plain Wire.**—An increased demand in Plain Wire is reported, principally in the way of more liberal specifications. Conservatism continues to be exercised in placing new orders, owing to the uncertainty surrounding the future of prices, which are not as regularly maintained as heretofore. Quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of \$1.80 for Plain and \$2.10 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

No.	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....	\$1.80	1.85	1.90	1.95	2.05	2.15	2.25	2.35	2.35
Galvanized....	2.10	2.15	2.20	2.25	2.35	2.45	2.55	2.65	2.65

**Chicago.**—Because of a more active demand for Fencing manufacturers are specifying more liberally, but there is not much new buying, and what there is con-

cerns only actual present needs. The general tendency is to restrict purchases to the requirements of current consumption, and the hand to mouth buying which this policy involves will likely continue until confidence in the stability of prices is again fully established. We quote as follows: Car lots to jobbers, \$1.98, f.o.b. Chicago, and to retailers, \$2.05.

**Pittsburgh.**—Specifications against contracts for Plain Wire are coming in in a fairly satisfactory way, and new orders, while confined to small lots, are fairly numerous and aggregate considerable tonnage. In view of the reductions of about \$1 a ton in Plain Wire there is no doubt but that the large trade and consumers will continue the policy of buying only to cover actual needs, until satisfied that prices will not be any lower.

**Stove and Tire Bolts.**—The market for Stove and Tire Bolts has long been in excellent condition, and the extreme established prices of manufacturers have been well maintained. Slight concessions recently obtained from one or two manufacturers by the largest buyers have probably been made with an eye on the Wire market.

**Brass Goods.**—The prevailing low prices on steam and water Brass Goods, Valves, Cocks, &c., seem to be regarded by some buyers as affording a good opportunity for placing orders. Business is in better volume than for some time.

**Shovels.**—Some independent manufacturers of Shovels are making slight concessions on their lines in an effort to secure orders.

**Elbows and Shoes.**—Noteworthy regularity is observed in the market for Conductor Elbows and Shoes, the new list recently adopted by several manufacturers being now generally established in the East. The established discount of 80 per cent. to retail trade is well maintained.

**Horseshoes.**—Another conference participated in by manufacturers of Horseshoes who are acting in harmony has resulted in no change in established prices. The volume of business is naturally light at this time of year and buyers are likely to defer placing important orders until they are assured as to the level of the market for the fall season.

**Tin, Enameled and Galvanized Ware.**—An acute condition has developed in Tin and Enameled Ware, sharp competition having led to important reductions on lines which until recently have been fairly well maintained. The market is unsettled and irregular and buyers are purchasing as little as they can get along with. Galvanized Ware reflects the situation to some extent, but was already so low on competitive lines that there was little room for further concessions.

**Strap and T-Hinges.**—In the recently revised quotations on wrought Strap and T-Hinges, which have appeared in our late issues under Current Hardware Prices, extras were inadvertently allowed to remain as before the decline. It should be stated that the extras generally allowed are somewhat smaller than heretofore, so that the price to general retail trade is now fairly represented by the printed discounts, which are as follows:

	Discount.
Light Strap.....	65 %
Heavy Strap, plain and corrugated.....	75 %
Light T.....	60 %
Heavy T.....	40 and 10 %
Extra Heavy T, plain and corrugated.....	65 and 10 %
Hinge Hasps.....	40 %

**Rope.**—The market continues in about the same condition as for some time, the demand being moderate and usually for small lots. Prices are without material change, general quotations on small quantities of Rope, 7-16 in. in diameter and larger, being as follows: Pure Manila, 8¼ to 8½ cents; Pure Sisal, 6¼ to 7 cents. Mixed grades of both kinds grade down in price according to quality. Jute Rope, ¼ in. and up, No. 1, is 6¼ to 6½ cents, and No. 2, 5¼ to 5½ cents.

**Window Glass.**—The lower prices made by the American Window Glass Company, which were given in these columns last week, of 90 and 40 per cent. discount on single and 90 and 40 and 10 per cent. discount on

double strength, came as a surprise to the trade. Just what effect this will have on the market at large is, as yet, hard to determine. It has generally been supposed that hand operated plants could make no lower prices than those at which they have been selling, even at the very low wages that are being paid workmen. Some of the skilled workmen are reported having given up their places as their pay was little more than that of common day laborers. The report is in circulation that Glass plants in at least one section of the country have decided not to meet the recent cut in prices nor to accept any cancellations of orders. Hand operated factories are anxiously awaiting the consummation of the Imperial Window Glass project, which appears to have a fighting chance of being perfected. Last week directors were elected in some of the Glass districts, and it is understood a meeting is to be held this week to close the deal, if possible. In the East jobbers are holding Glass at about 35 per cent. discount for single and 40 per cent. discount for double, but there the business done is insignificant.

**Building and Roofing Papers.**—The demand for Building Papers is still moderate, with no present indication of immediate revival, there being so far only fair spring business. The price reduction made January 25 is still current, prices in and about New York showing no change. The tendency further West is toward an even lower level, the bulk of that trade, however, averaging larger quantities. The market is represented by the following quotations:

	Carloads.	Less than carloads.
Tarred Felt, per ton.....	\$32.00	\$34.00
Slaters' Felt, per ton.....	35.00	37.00
Two Ply Tarred Felt, 40 lb. per roll.....	.48	.52
Three Ply Tarred Felt, 60 lb. per roll.....	.68	.72
Two Ply Tarred Felt, 45 lb. per roll.....	.58	.62
Three Ply Tarred Felt, 70 lb. per roll.....	.78	.82
Rosin Sized Sheathing, 25 lb. per roll.....	.36	.40
Rosin Sized Sheathing, 30 lb. per roll.....	.44	.48
Rosin Sized Sheathing, 40 lb. per roll.....	.58	.64
Deafening Felt, 9, 6 and 4½ sq. ft. per lb.....	40.00	45.00
Red Rope Roofing, 500 sq. ft. per roll.....	\$3.75	
Red Rope Roofing, 250 sq. ft. per roll.....	1.88	
Red Rope Roofing, 100 sq. ft. per roll.....	.80	
Black Waterproof Sheathing, 18 lb. per roll.....	.65	
Black Waterproof Sheathing, 25 lb. per roll.....	.95	
Black Waterproof Sheathing, 40 lb. per roll.....	1.30	

**Linseed Oil.**—The market has been exceedingly dull owing to the lack of buying, either in large or small quantities. Crushers are holding firmly to regular prices, as they have not an overabundance of Seed or Oil. Many have contract orders on their books, upon which shipments are made every month. A considerable number of those who placed these orders apparently overestimated their requirements, as considerable of this Oil, as it is received by the purchasers, is offered for sale at 1 or 2 cents below crushers' prices. Regular quotations in 5-bbl. lots are as follows: State and Western Raw, 55 cents per gallon; City Raw, 56 cents per gallon. Boiled Oil is 1 cent advance on Raw.

**Spirits Turpentine.**—The market has strengthened considerably during the week upon advices from Southern points of temporary stoppage of new crop receipts. The following prices represent the New York market: Oil Barrels, 40½ to 41 cents; Machine Made Barrels, 41 to 41½ cents per gallon.

## SPRING CATALOGUE OF AN ILLINOIS HOUSE.

A CREDITABLE spring catalogue of more than 50 pages has lately been issued by McNutt & Musgrave Brothers, Hutsonville, Ill., 1000 copies being distributed among those whose trade is solicited by the firm. It is the fourth annual publication, the house finding that this sort of publicity pays. "Show me to your neighbors and friends," appears at the top of the front cover, while at the top and bottom, respectively, of each page are the quotations, "McNutt & Musgrave Bros.—They pay the freight," and "The old Hardware store on the corner where quality goods are sold right." The opening page of the catalogue presents portraits of the

members of the firm, and of the employees who are referred to as "the men who know how" to supply the needs of customers. The firm's guarantee appears on the second page, and is to the following effect:

We guarantee all goods sold by us to be good value for the prices asked; to make good any article not found to be as represented; to cheerfully refund you your money on any purchase made from us, if after careful examination you are not satisfied.

The willingness of the firm to refund money if purchases are unsatisfactory is also enforced on the back cover.

Prior to mailing the catalogue a postal addressed to "Dear Madam and Family" was sent out, reading as follows:

Within the next few days we will send to your home our Big 56-Page Spring Catalogue, which we have published wholly ourselves right here in our own store and had it all printed in our own home, town.

The purpose of it is to better acquaint you with us and our goods and manner of doing business, for we realize our interests are mutual.

We are proud to send you this catalogue and to be enabled to offer so large a line of strictly high-grade goods at such reasonable prices.

At any time you are in town we heartily invite you to make our store your headquarters and to look around and examine the many useful articles we have for use in the home and on the farm.

Hoping you will carefully examine the catalogue when received and that you will show it to your neighbors and friends.

The postal also called attention to the spring opening on Friday and Saturday, March 19 and 20.

THE STAR EXPANSION BOLT COMPANY, Bayonne, N. J., manufacturer of a well-known line of Expansion Bolts, Toggle Bolts, Cable Hangers, Drills and Drill Holders, has removed its general offices from Bayonne to 147 Cedar street, New York, where a complete stock will be maintained and where customers and all others interested are invited to call.

THE ADVANCE STAMPING & MFG. COMPANY, Indianapolis, Ind., announces the retirement of William W. Williams, who has been president since its organization in 1905. Mr. Williams' interest has been acquired by F. H. Wheeler, who has been elected president by the Board of Directors. E. W. Spencer, secretary and treasurer, has assumed the general management of the business.

The Brownsville Hardware Company, Brownsville, Texas, has been incorporated with a capital stock of \$15,000. The company handles Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Window Glass, Agricultural Implements, Paints, Oils, Sporting Goods, Pipe and Fittings.

The Volga Hardware Company, Volga, S. D., recently organized and incorporated, has purchased the Nyman Hardware stock, and will continue the business. The officers of the new company are: A. B. Dalthrop, president; Lewis Johnson, vice-president, and A. Nyman, secretary and treasurer.

THE YUNGMEYER HARDWARE COMPANY, Wichita, Kan., has bought out and taken possession of the Hardware store of C. O. Page & Co., 518 East Douglas avenue. It is the purpose of the new company to modernize the store and carry a complete and up to date stock.

The Prince-Martin Hardware Company, Fort Morgan, Colo., has been recently organized, and will carry on the General Hardware business, giving attention also to tinning and heating.

E. C. Evans, Iowa City, Iowa, has sold his Hardware store to Gruwell & Woods, who have succeeded him in the business.

W. F. Dickinson, Exeter, Neb., has sold the Hardware department of his business to T. W. Daniels.



### AMONG THE HARDWARE TRADE.

The Hardware and lumber business formerly carried on by the Stratman Hardware & Builders' Supply Company, Huntingburg, Ind., has passed into the hands of W. A. Martin, formerly of Clinton, Ind.

The Bristol Hardware Company, Bristol, Conn., has been incorporated to take over the retail Hardware business of Stedman & Co. of that place. The incorporators are Richard H. Beamish, Peter A. Cawley and Nathan B. Richards. The business will be continued with a full line of Hardware, Sporting Goods and Paints.

A. L. Henly & Son, wholesale and retail Hardware merchants, 2620 Kensington avenue, Philadelphia, Pa., have opened a branch store under the name of the Henly Hardware Company at 239 Market street in the same city. The same lines will be carried, but on a much larger scale.

The Dooley Hardware Company has been incorporated in Rockville, Ind., with a capital of \$16,000, handling Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Agricultural Implements, Paints, Oils, Sporting Goods, in connection with plumbing, steam fitting and electric wiring.

M. D. Hathaway has sold his business in Monroe, Wash., to the Stephens Hardware Company, which will handle Shelf Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils.

The Drennan Hardware Company, Buffalo, N. Y., has let contract for the erection of a new building, 50 x 150 ft., three stories, on Otislo street, near South West street, to cost \$15,000.

Having purchased Implement and Hardware stocks heretofore operated by other interests, the M. Mahon Hardware & Implement Company, Fairfax, Mo., incorporated with a capital stock of \$8000, has consolidated them, and will continue the Hardware and Implement business.

The firm of Leach & Ellingson, Havana, N. D., has been succeeded by the Havana Hardware Company, organized with a capital stock of \$20,000, the incorporators being E. L. Leach, S. E. Ellingson and Edward Ellingson.

G. Kurth, senior member of the Hardware firm of G. Kurth & Son, Wausau, Wis., has retired from the business, his interest having been purchased by his son Frank, who becomes sole owner, and will continue on the former lines.

K. T. Olsen & Bros., have purchased the Hardware business of Chas. H. Gile, Clear Lake, S. D., and will handle Shelf Hardware, Stoves, Tinware, Paints, Oils, Sporting and Athletic Goods, Harness, Pumps and Windmills.

The Malbone Hardware Company has lately opened a new store in Kalamazoo, Mich.

The Boy Lumber, Hardware & Furniture Company has purchased the business of Irish & Eymann, Raymond, Kan.

The Dooley Hardware Company, Rockville, Ind., recently incorporated with a capital of \$16,000, has taken over the Hardware stock and business of Dooley & Dooley. The business will be conducted upon the same lines as heretofore.

The Frier Hardware Company, Sulphur, Okla., has been incorporated with a capital stock of \$10,000, to do a General Hardware and Implement business. The directors are: G. C. Frier; L. H. Frier, and M. D. Frier.

The C. P. Patton Hardware Company, Cabool, Mo., was recently incorporated with a capital stock of \$10,000, and will handle Hardware, Farming Implements, Wagons, Buggies, Harness, Saddles, Building Material, &c. The officers of the new organization are: C. P. Patton, president; E. S. Parmenter, vice-president; Henry Parmenter, treasurer, and Charles C. Schlicht, secretary.

The Davidson Hardware Company, Lexington, N. C., has been incorporated with a capital stock of \$50,000, to do a wholesale and retail business. The incorporators are: J. W. Noell, Dermot Shemwell and S. L. Owen.

John H. Corbit, who has been in the Hardware, Stove and Tinning business, at St. Johns, Mich., since 1856, has sold out to Ridenour Bros., who will continue the business at the old stand. Mr. Corbit was St. Johns' oldest living merchant.

Kirby Bros., Bucyrus, Kan., have been succeeded in the Hardware, Stove, Implement, Paint and Sporting Goods business by Kirby & Heflebower.

A. D. Ward, Augusta, Maine, has sold his Hardware, Plumbing, Heating and Sheet Metal business to Malcolm & Dyer.

The Schulenberg & Beck Company, Tipton, Ind., has been incorporated with a capital stock of \$15,000, to conduct a General Hardware, Implement and Vehicle business.

The Good Hope Hardware & Implement Company, Good Hope, Ill., Cummings, Ward & Co., proprietors, has succeeded to the General Hardware business of Selfridge & Galloway.

The Spencer Lumber Company, Ogden, Utah, has been incorporated with a capital stock of \$100,000. The officers are: Hiram H. Spencer, president; L. B. Spencer, vice-president; Alex. Wallser, secretary; C. H. Kircher, treasurer. The company will do a wholesale and retail business in Shelf Hardware, Lumber and Coal.

The Stephens Hardware Company has succeeded Stephens & Saunders in the Hardware business, at Emporium, Pa.

The Grahek Hardware Company, Mora, Minn., has lately opened up in business, carrying a complete line of Hardware, Furniture and Farm Machinery. The company is incorporated with a capital of \$50,000, the incorporators being: John A. Grahek, Thomas H. Caley and Edward K. Evers.

H. E. Morse is successor to J. J. Trerise, Randolph, Vt., handling Hardware, Ranges and Heaters; general plumbing, hot water heating and job work, being carried on.

Wallace & Slead have succeeded to the business of Wallace & Son Company, Overton, Neb., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Paints, Oils and Sporting Goods.

Richard Bachstein has purchased the business of W. F. Korner, Falls City, Neb., and will handle Shelf Hardware, Stoves, Tinware, Housefurnishings, Plumbing Goods and Furnaces.

N. A. Bryan has purchased the business of F. W. Mattoon, Clyde, Kan., and will handle Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Paints, Oils, Sporting Goods, Harness and Fencing.

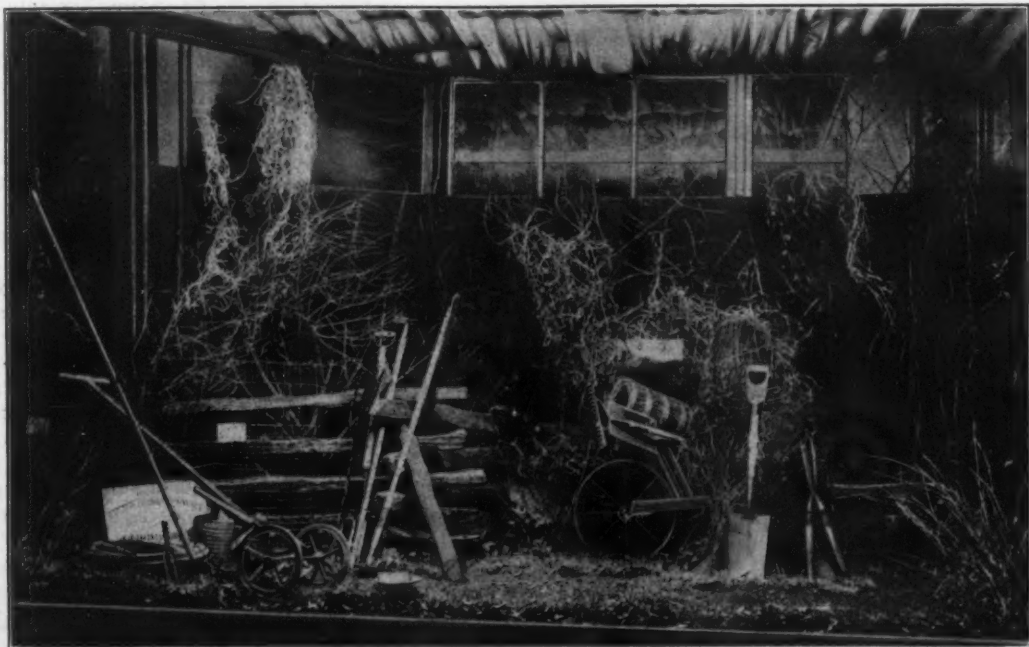
The Dobyns-Lantz Hardware Company, Stigler, Okla., has been established with a capital of \$20,000, to conduct a business in Hardware, Furniture and Farm Implements. The directors are H. C. Dobyns, L. J. Lantz, G. A. Blanton and Frank Dobyns.

## SPRING GARDEN GOODS WINDOW.

### A Very Picturesque Display.

THE window exhibit reproduced herewith is one made by E. N. Howell Hardware Company, Dixon, Ill. As evident the purpose of the display was to call atten-

branches of yellow willow, green rosebushes and red dogwood, the dead vines, green sod, and the dark red background. It also fails to show the perspective which the picture in the back gives and the lights and shadows. The Spade is leaning against a large oak stump. The Rail Fence is genuine; the card on Poultry Netting near Fence says: "The old and the new." A few Garden



*Spring Garden Goods Window of E. N. Howell Hardware Company.*

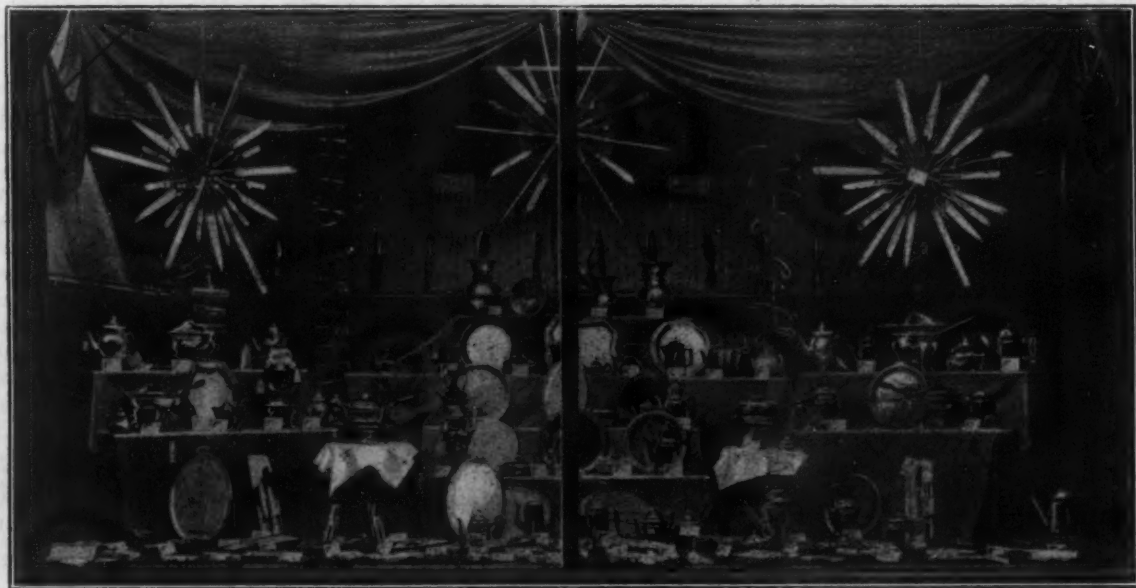
tion to garden necessities, and this it did in a manner that was interesting and effective. The floor was covered with fresh green sod laid on waterproof paper. With an occasional watering it retained its freshness for 10 days. The background was of dark red cloth, into which was set a picture of a rural landscape. This picture was surrounded by last year's morning glory and other vines and had a bank of sod in front, so placed that in looking through the vines and branches and over the sod bank it seemed like a continuation of the window into the far distance. An electric light placed be-

Tools, pan of grass seed, Hose, &c., are distributed much as if left by a person who had been working there.

### FANCY WARE DISPLAY.

#### A Striking and Effective Arrangement of Goods.

THE Rudge & Guenzel Company, Lincoln, Neb., pays much attention to its windows, which are changed once a week. The company states that it is well repaid for the time and labor so expended, as displays always lead to increased business even when devoted to off sea-



*Fancy Ware Display of the Rudge & Guenzel Company.*

hind the bank and carefully arranged with a reflector produced an effect which aided in carrying out the illusion.

The photograph from which our reproduction is made does not, however, do the window justice, as it fails entirely to show the blending of colors of the various

son goods. The windows, one of which is illustrated herewith, are 9 ft. deep, 16 ft. long and about 9 ft. high in front. They are entirely inclosed, and the ceiling slopes backward to a height of about 7 ft. in the rear. In making the displays the ceiling is usually covered with some light colored material, and the background



is made of plain or figured cloth of a darker shade. The backgrounds are frequently changed to keep them looking fresh and new.

The display illustrated consisted largely of nickel plated ware, &c., which, as will be seen, was arranged in a most attractive way on stands of different heights. The articles used included Chafing Dishes, Percolators, Tea and Coffee Pots, Tea Kettles, Serving Trays, Flat Ware, Carving Sets, &c. Suspended from the ceiling, about a foot from the back of the window, were two strings of Coat and Trousers Hangers.

In front were hung three covered disks on which were fastened a large variety of Butcher, Bread and Kitchen Knives, arranged in the form of rosettes. These were about 2 ft. from the front of the window and high enough not to interfere with the main display. The picture affords an excellent study in effective and striking arrangement without elaborate adjuncts which would not be available in the average store.

## CAUSES AND PREVENTION OF FIRES.

**T**HERE is much truth in the idea that a person insures his goods and chattels as a precaution against fires from adjoining property. At all events, this is the cause of a large proportion of the fire losses in Hardware stores which have recently been reported.

### The Cause Within.

Of course fires do sometimes start in the store of the insured. The cause of one bad fire was probably the use of a kerosene oil lamp in the cellar, which had been the practice for years, notwithstanding the fact that gas was used on the floors above and that electric lighting was procurable. It is assumed that a thoughtless clerk left the lamp burning on a barrel of oil under the cellar stairs.

### An Ounce of Prevention.

Many fires that start in stores when members of the force are there, if prompt action is taken can be put out with little damage by the use of simple modern appliances conveniently located, such as hose, some of the various kinds of hand grenades or portable fire extinguishers. Failure to have such fire protection when needed is often the result of procrastination.

### Outside Causes.

In four or five recent fires for which the owners of the stocks were in no way responsible, all the buildings caught from fires originating nearby. In one case a warehouse was destroyed as the result of a fire in an adjoining building. Two stores in different towns were burned by fires which started, one in a millinery store and the other in a restaurant. In both these cases the buildings where the fires originated were three doors away from the Hardware stores, and in neither case was there adequate fire protection in the towns to prevent total loss. Another fire was caused by the burning of a frame livery stable, but

### Wise Precautionary Measures

previously taken by the proprietors of the Hardware store, prevented a disastrous fire. A reel and 1½-in. hose, which could be attached to city water, had been installed in the store, and by its use the damage was confined to the window and door casings. The expense of the hose and reel was insignificant in comparison with the value of the property saved.

### A Fireproof Building Burned.

Another fire which destroyed a building supposed to be fireproof originated in an adjoining hotel. The store building was of brick, with walls 24 to 30 in. thick, iron doors and shutters, and with no openings underneath. The roof was made of 3-in. plank, over which was a layer of tin, then a layer of brick and mortar, and on the top of this a layer of tin roofing. The hotel building was higher than the store and part of this burning structure fell on the store roof, where it lay long enough to ignite the interior woodwork. The hotel fire started at 8.30 p.m., but the fire in the store building did not burst

out until 2 o'clock in the morning. Different portions of the building showed various degrees of heat, some goods being totally destroyed, while others were in such a condition that they were overhauled and disposed of at a discount. A number of Stoves and Ranges passed through the fire in good shape, several being almost as good as new. It is the opinion of the proprietor that the brick and mortar from the roofing fell on portions of the stock and served to protect it from the intense heat.

## COMING HARDWARE CONVENTIONS.

During the next few months the following conventions of Hardware organizations will be held:

TEXAS HARDWARE JOBBERS' ASSOCIATION, April 19, 20 and 21, at Houston.

MISSISSIPPI RETAIL HARDWARE ASSOCIATION, May 11 and 12, at Jackson.

ALABAMA RETAIL HARDWARE ASSOCIATION, May 12, 13 and 14, at Birmingham. Headquarters at Hotel Hillman.

GEORGIA RETAIL HARDWARE ASSOCIATION, May 18, 19 and 20, at Valdosta.

AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION, June 9, 10 and 11, at Pittsburgh. Headquarters at Fort Pitt Hotel.

SOUTHERN HARDWARE JOBBERS' ASSOCIATION, June 9, 10 and 11, at Pittsburgh. Headquarters at Hotel Schenley.

ARKANSAS RETAIL HARDWARE ASSOCIATION, June 22, 23 and 24, at Fort Smith. Hardware Exposition at Tabernacle Hall.

CAROLINAS RETAIL HARDWARE ASSOCIATION, July 6, 7 and 8, at Asheville, N. C. Headquarters and Hardware Exposition at the Battery Park Hotel.

SOUTH CAROLINA RETAIL HARDWARE ASSOCIATION, Charleston, in July, the exact date not having yet been determined.

MICHIGAN RETAIL HARDWARE ASSOCIATION, August 11, 12 and 13, at Saginaw. Hardware Exposition at the Auditorium. Headquarters at Hotel Vincent.

FLORIDA RETAIL HARDWARE ASSOCIATION, October 12, 13 and 14, at Jacksonville.

## South Carolina Retail Hardware Association.

**T**HE Retail Hardware Association of South Carolina, which was organized last fall with Fred H. Garner, Union, as president; N. A. Craig, Greenwood, first vice-president; C. T. Summer, Newberry, second vice-president, and Paul W. McLure, Greenwood, secretary-treasurer, will hold a convention at Charleston in July, the exact date not yet being decided. While nothing definite in regard to the formal programme has so far been determined, it is hoped to hold a very interesting meeting.

It is proposed to hold the business sessions in Charleston in the forenoon, the afternoons and evenings being spent at the Isle of Palms, to which place the members will be transported by boat and trolley. The Hardwaremen of Charleston are making preparations to extend a warm welcome to the members, while the traveling salesmen, of whom a number are identified with the organization as associate members, are moving actively in working up interest in the convention.

THE BIDDLE PURCHASING COMPANY, New York, has removed from the offices it has occupied for several years at 78 Reade street to the building, 105-107 Chambers street, in the heart of the Hardware district and occupied by many houses in the trade. The company takes the fourth floor of the building, which is being fitted up for its convenience, and affords much more commodious quarters than heretofore.

THE SMITH & HEMENWAY COMPANY, 108-110 Duane street, New York, has concluded arrangements for representation on the Pacific Coast by Conger & McLean, 717 Market street, San Francisco.



## THE QUESTION BOX

This department is open for the discussion of questions which arise in the practical conduct of the Hardware business. Our readers are invited to contribute, submitting inquiries or answering questions.

Correspondents are expected to give their names and addresses, but in order to encourage frank expressions of opinion the advices of our correspondents will be treated in confidence, names and addresses not being published.

For convenience Questions or Answers should be addressed to THE IRON AGE QUESTION BOX, 14-16 PARK PLACE, NEW YORK.

### Departments in Hardware Stores.

**QUESTION NO. 4.** *Have any of your subscribers had any experience in departmentizing their stocks? That is, knowing just what their sales of various departments are, charging up such departments the cost and their proportion of the expenses of doing business. If so, I should be glad to know how it has worked out.*

The amount of interest which has been shown in this subject by our readers indicates that many Hardware merchants are on the alert for methods of improving the organization of their business. They have been thinking along these lines. Most of them, however, are in the attitude of seeking rather than giving information on this particular subject. Others are convinced that their houses are too small to be departmentized, and can be operated more economically on the present unified basis.

We give below brief extracts from a number of letters showing the attitude of merchants who have given the subject some attention and are LOOKING FOR SUGGESTIONS.

The departmentizing of business we believe to be a suggestion worthy of every dealer's consideration, notwithstanding the fact that we do not practice it ourselves. Where the business is large and each department is more or less distinct the departmentizing principle is extremely practical. This is evident from the fact that it gives the manager a key to the department which requires more care, and that from which he should withdraw his attention. It shows him which side of his business is profitable and which is not.

We have not departmentized our business, but would be pleased to know, like the other fellow, how it is worked.

I can see that to departmentize a stock as suggested by the question is an exceptionally good thing to do, and I intend to institute something of the kind. Such a system will show what lines are unprofitable and what ones are not being pushed as they should be.

Your correspondent has asked just the question we would like to see answered, as we have felt that some step of this kind would be advisable in our own case. The old method of doing business with the eyes blindfolded in regard to the profit or loss in the various departments is bad business, and the sooner any concern can outgrow it the more sure they are of doing a profitable business.

#### Not Favored for a Small Business.

The following expressions come from merchants who have decided that their business is too small to be departmentized advantageously:

We have never attempted anything of this kind as we do not consider that our business is large enough for such a system.

We do not itemize our expenses by departments. We think this would involve a little too much detail for a business the size of ours. We do not know of any retail Hardware house that does this.

We have never thoroughly established departments in our store. We have contemplated it several times, but have not seen how we could place our stock to advantage. Our business is too small to have a manager for each department. I shall be interested to note reports received by you from different parts of the country.

We would think that departmentizing would apply naturally to establishments that are very large. This however, is a very interesting subject, and we would be pleased to learn how such a system would work out as applied to the average retail store.

There is grief enough and plenty of work here for me without looking for too much system.

Departmentizing stocks to show profit results for each department is only practical in very large stores. The volume of business in the smaller stores will not admit of the extra expense of establishing a perfect system.

My business is not large enough to try departmentizing, but in a large business would think it a most satisfactory way.

Departmentizing is not practical in stores of ordinary size.

#### Successfully Tried.

The following letters from merchants who have experimented in departmentizing indicate that it operates successfully, and suggest the practical advantages secured:

**FROM AN OHIO FIRM:** This subject should have more thought from the Hardware trade. They should divide up stores in different departments and keep tab on these, and see which one is making the most money, pushing that to the front by making it an example for the other departments. We have tried it in one department for two or three years and it has worked very successfully.

**FROM AN INDIANA HARDWAREMAN:** I have three lines, Hardware, Lumber, and Farm Implements and Seed. I have a manager for each department, with a central office for the keeping of individual accounts and paying of bills, &c.; also a cashier's desk, away from main office, where all cash is carried by a pneumatic tube system. This I find very satisfactory, as when I take inventories

I know just what each department has done, that is, the amount sold, expense, net profit and cost of selling goods. The head of each department receives a salary and per cent. on net profits. I don't think there is anything in going to the expense of keeping sales of each line, say Tools, Builders' Hardware, Paint, &c., as every salesman is supposed to sell all.

**FROM AN OHIO MERCHANT:** I carry on my books several different classifications, such as General Hardware, Stoves, Stove Repairs, labor, Paint, Sporting Goods, &c. Each purchase is charged under proper heading and on the credit side each sale is credited under the proper heading. In this way I know at the end of the year just what my sales are in the different departments and the gross profit on the same. It's an excellent idea by way of comparison each year. Then,

#### Advantages of Yearly Comparison.



too, it enables one to know just what profits come from each particular department. After it is once installed in the regular set of books it does not require any more work than the usual way of bunching everything together.

### Uniform Size of Invoices, Etc.

**QUESTION No. 5.** *Would it not be well if the Hardware people should adopt the plan of having all invoices, statements and letters of a uniform width, as this would be much better for filing?*

While some of our readers have taken the ground that the uniformity suggested would be a convenience and should be worked for, there are others who remark either plainly or by inference that the matter is of minor importance, pointing out the impossibility of securing agreement among the countless manufacturers, agents and jobbers. On such a matter ideas of the utmost variance would naturally be expected, not only because of varying tastes, but also because of the peculiar requirements of diverse lines. The following expressions have been received from merchants in different States:

**NEBRASKA:** This is the least of our troubles.

**WISCONSIN:** It would take considerable persuasion on the part of retailers to bring about such a radical change. We do not find any trouble in taking care of the invoices and statements that are now sent us.

**IOWA:** We hardly think this is practical or possible. Different firms in different localities adopt different methods of office work. Let's try to overcome some of the simple problems before reforming the business methods of Uncle Sam's domain. System is a good thing to put gray hairs on a young head. Simplicity and accuracy bring the best results—that is, get the results in the quickest and simplest way, at the same time leaving a clear transaction.

**Gray Hairs on Young Heads.**

**FROM A NEW JERSEY MERCHANT:** All invoices should be uniform by every business house in this country, most important of all stationery. Letter, note and statement heads should also be of a uniform size. It is something abominable the size invoices sent out by some houses. Absolutely unworthy of being filed away. Some of them are almost the size of a newspaper.

**The Two Extremes.** Up to a few years ago all invoices were uniform size, very rarely would we find an invoice otherwise. While some use extremely large headings, other houses have such mean invoices with about two lines on it and crowding in about 20 items more or less. Let us have uniform stationery.

**FROM A NEW YORK MERCHANT:** It would be a great thing for the Hardware trade generally if some width was universally adopted by dealers and manufacturers.

**Trouble in Filing.** I have suffered great annoyance and trouble on account of unreasonably wide sheets. At a considerable pains and great expense

I have installed in my office a filing system, and the great variation in the size of sheets used by my different friends and customers has caused me great trouble. I believe the trade, generally, would welcome a move toward standardizing widths of sheets for various uses, such as letters, invoices, &c.

### The Merchant's Advertising.

**QUESTION No. 6.** *What percentage should the merchant's advertising, newspaper and otherwise, bear to his total gross sales for the year?*

This question has been asked almost as many times as there are advertisers in the field. The answer is in-

fluenced by so many different considerations that it is next to impossible to give one which will have a general bearing. To establish a new business would probably require a larger expenditure than to keep up the publicity of one that has been known locally for a period of time. A business so located that the more profitable lines are large sellers can naturally stand a greater advertising expense than a business transacted in a territory where goods sold on a closer margin are in demand. Many hold to the general view that a Hardware business ought to be able to spend 5 per cent. or more, notwithstanding the fact that the general percentage usually named as a fair average is only 2 per cent.

The methods behind the advertising are so largely responsible for its results, that this factor becomes another obstacle in the way of fixing any given amount or percentage that should be disbursed. It is possible and quite probable that some men will handle a 2 or 3 per cent. appropriation with better results than other men will be able to get from two or three times as much. The subject requires constant attention and study. It is one of the most important departments of a merchant's work, although until a very recent date it has never been recognized as such.

The diversity of opinion and practice is indicated by the following letters:

**FROM AN ARIZONA FIRM:** We spend a little less than 1 per cent. per annum, but we think it depends very much upon the ability of the advertiser. The man who puts in the paper the old stereotyped ad of *John Smith, Hardware, Tinware, &c.*, cannot afford to spend anything, but a good, live advertiser who keeps the people guessing and watching to see what comes next, could probably afford to spend more than 1 per cent.

**Depends on Quality.**

**FROM A MISSOURI CONCERN:** We have never adopted any specific plan in regard to advertising, or rather the percentage of our sales that we would spend for our publicity, but usually have spent from 5 to 8 per cent. of our annual sales in the way of newspaper advertising.

**From 5 to 8 Per Cent.**

**FROM A NEBRASKA HOUSE:** We always spend from 2 to 3 per cent. of our gross sales for newspaper advertising, and have done so for the past 21 years. From the time we first started in business in this city, we were the most liberal advertisers in our line, and are at this writing the largest users of newspaper space in the exclusive Hardware business in this city.

**An Aggressive Policy.**

**FROM A MINNESOTA MERCHANT:** I have never figured out the advertising problem on percentage basis. I have always made a point to occupy a good space in every issue of the paper regardless of season, and supplement this by extra space at times when I think it is advantageous. This represents about 2 to 3 per cent. of my annual sales. It has always been my opinion that dealers lose more than they gain by spasmodic advertising, that is advertising only during the busy season. I believe to get full advantage of their past advertising they ought to keep at it constantly and continually.

**Spasmodic Advertising a Losing Game.**

**FROM A UTAH HOUSE:** We do no newspaper advertising whatever except about holiday time, and have always been small advertisers in that field.

Of special interest is the statement of a successful concern in a large city on the Pacific Coast which advises us that it never advertises in the newspapers at all.

### Omissions in Bills of Lading.

QUESTION NO. 7. *Why will manufacturers and jobbers shipping goods fail to put weight and rate of freight in the bills of lading?*

This question has called out a number of replies or, to make use of the language of a convention report, many members were on their feet simultaneously to express themselves on the subject. We can make use of only a few of the answers, but the interest of the trade is shown in the fact that one or more replies come from North Carolina, South Carolina, Iowa, Arkansas, Virginia, Ohio, Indiana, Vermont, Wisconsin, Michigan, Missouri, North Dakota, South Dakota, Minnesota, Kansas, Illinois, Maryland, New York and Florida. A number of our correspondents report that the rate is omitted much more frequently than the weight, and seem to regard the former as comparatively unimportant. Many different phases of the subject are touched upon in the letters of our correspondents, a few of which are represented in the following extracts:

FROM A MERCHANT IN NORTH CAROLINA: May I not ask if the brother from Florida is not mistaken in his major premise that this involves a loss to him in dollars and cents? I agree with him that it means a lot of trouble and annoyance, but in all my claims for overcharges, &c., I have always been informed that all rates and weights were subject to correction at point of destination. That I know is the ruling in North Carolina, and were it not so I do not see how any one could make claim for overcharges in weight or rate when inserted in the bill of lading.

FROM AN ARKANSAS MERCHANT: I am of the opinion that the shipper does the party to whom goods is shipped a favor by leaving off both weight and rate in a bill of lading, for the reason that both are subject to correction at destination if either is given incorrectly. Besides, I am informed by a very large shipper that it is a cause for delay in making shipments when it is required of a railroad company to furnish weight and rate before accepting shipment.

FROM A VIRGINIA HOUSE: We are greatly troubled by manufacturers and jobbers not putting weight and rate on bills of lading. By so doing they would save us time and money. The railroads give us trouble by not putting on the freight bill the shipper's name and point of shipment.

FROM A WISCONSIN HOUSE: We do not see any objection to putting weight of articles on bills of lading, but we do not think they should be expected to look up different rates, as it would entail a lot of work, especially so in shipment from jobbers when a shipment would comprise a number of lines requiring different rates.

FROM A SOUTH DAKOTA CONCERN: If in any possible way you can get the jobbers to put weight and rate of freight on their bills of lading, you will save the dealers thousands of dollars. We have been trying for some time to get our large jobbers to do this, but have not been successful.

### Questions Referred to Our Readers.

#### Advantage of Cash Discount.

QUESTION NO. 8. FROM NEW YORK: *If a merchant's purchases in the course of a year amount to \$20,000, what actual saving is effected by taking advantage of the discount of 2 per cent. for cash in 10 days?*

#### Changes and Failures in Business.

QUESTION NO. 9. FROM NEBRASKA: *Why are there so many changes and failures in the Hardware business in the West?*

### The Sale of Special Brands.

QUESTION NO. 10. FROM PENNSYLVANIA: *What is the experience of the trade in selling special brand goods? In other words, to put it plainly, how many retail merchants if they had the past three years to do over again would put in stock special brands of Hardware, Edge Tools, &c., as sold by jobbers to-day?*

#### Should Retail Merchants Demand Low Prices?

QUESTION NO. 11. FROM OHIO: *Is it wise on the part of retail Hardware dealers to DEMAND that they be given prices that will enable them to meet the prices of the great retail stores of the cities?*

#### Remittances by Check or Draft.

QUESTION NO. 12. FROM WISCONSIN: *Should remittances be made by local check or bank draft?*

### The Pittsburgh Conventions.

THE Pittsburgh General Committee, which has general charge of the entertainment features of the conventions of the American Hardware Manufacturers' Association and Southern Hardware Jobbers' Association, to be held in that city, June 9, 10 and 11, has provided an ample programme of entertainment, as follows: On Wednesday evening, June 9, a smoker will be given with band concert and vaudeville on the lawn of the Schenley Hotel. Thursday afternoon sight-seeing trips will be made to various manufacturing plants located in the Pittsburgh District, and in the evening there will be a dinner for the men and a card party for the ladies at the Schenley. A garden party and band concert will be given on Friday afternoon at the Pittsburgh Country Club, and in the evening there will be a dance at the Schenley. All expenditures in connection with the entertainment of members of the two associations and other visitors will be borne by the Pittsburgh members of the American Hardware Manufacturers' Association.

THE U. S. CHEMI RUBBER BELTING COMPANY, 109 South Clinton street, Chicago, has changed its name to the U. S. Chemi Belting Company, and at the same time has reduced the capital stock from \$200,000 to \$125,000.



The change in title was prompted by the fact that the old name created a wrong impression regarding the character of the Belting, which is not of rubber composition, but is made of stout fabric with linen cord center firmly cemented together by a special elastic cement. This Belting has been fully described in *The Iron Age*. Coincident with the change of title a new trademark, as reproduced herewith, has been adopted, in which the word rubber is omitted.

WILLIAM I. BAKER has been elected president of the Albany Hardware & Iron Company, Albany, N. Y., succeeding Chas. H. Turner, whose resignation was noted in our last issue. William B. Wackerhagen has been elected vice-president; James K. Dunscomb, treasurer, and William E. Foskett, secretary. The following directors have been chosen: William I. Baker, William B. Wackerhagen, James K. Dunscomb, William H. Gick and William S. Dyer.

THE CLAUSS SHEAR COMPANY, Fremont, Ohio, is offering to merchants a substantial oxidized iron display stand free with an assortment of three dozen Clauss Razor Strops. The company guarantees the Strops as it does its Cutlery. The cost and selling price of the Strops are given on an illustrated circular displayed on the stand and represent a good profit for the merchant.

W. D. SANDERS has sold his Hardware business in Tecumseh, Neb., to Thomas & Smith.



# MAKING GOOD IN BUSINESS

HINTS AND SUGGESTIONS FROM MANY SOURCES

## Three Aphorisms.

There is nothing more anxious than carelessness; there is nothing more expensive than penuriousness; and every duty that is bidden to wait returns with seven fresh duties on its back.—*Charles Kingsley.*

## Opportunities for Advancement.

While business of all kinds has gone, and is still going rapidly, into a few vast concerns, it is nevertheless demonstrated every day that genuine ability, interested in the profits, is not only valuable but indispensable to their successful operation. Through corporations whose shares are sold daily upon the market; through partnerships that find it necessary to interest their ablest workers; through merchants who can manage vast enterprises successfully only by interesting exceptional ability; in every quarter of the business world, avenues greater in number, wider in extent, easier of access than ever before existed, stand open to the sober, frugal, energetic and able mechanic, to the scientifically educated youth, to the office boy and to the clerk—avenues through which they can reap greater successes than were ever before within the reach of these classes in the history of the world.—*ANDREW CARNEGIE.*

## A Factory with Two Rules.

Some years ago a superintendent took charge of a run down factory. It had stopped paying dividends under the former superintendent. When the new executive investigated he found out why. From top to bottom that plant was a graveyard of errors, blunders, mistakes. Dead stock was routed out here, spoiled work there. Much of it had been stowed out of sight by men no longer with the company.

The old superintendent had worked on the assumption, a very common one, that efficient men make no mistakes, that when a man is found in error it proves his inefficiency, and that the thing to do then is to discharge him before he can make any more. When all these costly private graveyards had been cleaned up (the company had paid for every one of them) the new superintendent made two rules absolutely plain to everybody in the place:

1. Nobody will ever be discharged for a mistake alone.
2. Anybody will be discharged instantly for covering up one.

When anything goes wrong in that factory to-day the employee responsible reports direct to the boss. The matter is talked over freely and fully. An error is considered valuable for the light it will throw on ways of avoiding it next time. If the employee needs censure (and he often does) it is given reasonably and quietly. Then the incident must be forgotten by everybody.

That plant began paying dividends again in the new superintendent's second year, and he is now president of the company.

## Use the Pen In Planning.

You must not weary yourself by considering the same thing in the same way; just oscillating over it, as it were; seldom making much progress, and not marking the little that you have made. You must not lose your attention in reveries about the subject, but must bring yourself to the point by such questions as these: What

has been done? What is the state of the case at present? What can be done next? What ought to be done? Express in writing the answers to your questions. Use the pen—there is no magic in it, but it prevents the mind from staggering about. It forces you to methodize your thoughts. It enables you to survey the matter with a less tired eye. Whereas in thinking vaguely, you not only lose time, but you acquire a familiarity with the husk of the subject, which is absolutely injurious.—*SIR ARTHUR HELPS.*

## Punctuality and Promptness.

Boys fail to satisfy the demand made upon them more from the lack of promptness and punctuality than by any other reason. Thousands of dismissals, rebuffs, discouragements and failures at the beginning of a career could have been avoided by these small workers had they made a cardinal point of being always on hand in their proper places during every moment when subject to duty.—*H. N. HIGINBOTHAM.*

## Working Through Others.

Sir Walter Scott says of Canning, "I fear he works himself too hard, under the great error of trying to do too much with his own hand, and to see everything with his own eyes. Whereas, the greatest general and the first statesman must, in many cases, be content to use the eyes and fingers of others, and hold themselves contented with the exercise of the greatest care in the choice of implements."

## Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM WILLIAM C. BIRK, Baraga, Mich., whose Hardware, Stove, Implement, Paint and Sporting Goods store has been destroyed by fire.

FROM J. H. LIPPINCOTT & Co., Gibbon, Neb., in which business a half interest has been purchased by T. B. Williams.

## L. & I. J. White Company's New Catalogue.

THE L. & I. J. White Company, Buffalo, N. Y., in an illustrated catalogue of 174 pages, just issued, containing new illustrations and text, shows a diversity of Edge Tools added to the line since the founding of the business in 1837. There is a portrait of Leonard White, the first president, together with views of the factory as in 1837 and 1909. The matter has been grouped in sections, a synopsis of which affords some idea of the wide scope of products.

Section 1 is largely explanatory, and deals with the best methods of ordering, measuring Chisels and Gouges, terms and warranty. Section 2 covers Socket Chisels and Gouges. Section 3 includes Tang Chisels, Gouges and Turning Tools. Section 4 embraces Floor, Cape, Cold and Pocket Chisels and Screw Drivers. Section 5 shows Axes, Hatchets, Hammers and Adzes. Section 6 covers Plane, Jointer and other irons for wood tools. Section 7 relates to Scrapers, Drawing Knives and Shaves. Section 8 includes Miscellaneous Coopers' and Ice Tools. Section 9 covers a comprehensive line of Butchers' Tools. Section 10 treats of styles of handles and illustrates machine Knives for various purposes. There are alphabetical and numerical indexes, the latter in consecutive order with page for quick reference, especially valuable when checking invoices.

Additional goods with novel features include Socket Firmer Chisels, Pocket, Floor, Cold and Cape Chisels, Screw Drivers and Bits, Tooth Plane, Irons, Ship Deck and Box Scrapers, Auto Body Knives, Awls, Loin Cut-

ting Knives, Saws, &c., here catalogued by the company for the first time. Page 65 illustrates the approximate curves of Regular, Middle and Flat Sweeps of Gouges, each size in each style, from  $\frac{1}{8}$  to 2 in. The entire book is handsomely got up, and is indicative of painstaking effort to make it helpful and instructive to the trade.

### Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

PHOSPHOR-BRONZE SMELTING COMPANY, 2200 Washington avenue, Philadelphia, Pa.: Price-list No. 24, devoted to products of Phosphor-Bronze, including Ingots, Castings, Alloys, Anti-Friction Metal, Rods, Wire, Rope, Telegraph and Telephone Wire, Sheets, &c.

INDIANAPOLIS BRUSH & BROOM MFG. COMPANY, Indianapolis, Ind.: Illustrated catalogue covering a varied line of Brushes and Brooms.

SYCAMORE WAGON WORKS, Sycamore, Ill.: Illustrated catalogue of low down, short turn, Hardware Delivery Wagons, Stake Wagons and Truck Wagons.

T. H. CHUBB ROD COMPANY, Post Mills, Vt.: Illustrated catalogue of Fishing Rods, Tackle, Flies, Bait and Anglers' Supplies.

J. M. CARPENTER TAP & DIE COMPANY, Pawtucket, R. I.: Booklet giving standard sizes and pitches of threads for Taps and Dies, adopted by the leading Tap and Die manufacturers of the United States, and intended to take the place of what is known as the V thread.

GEORGE P. CLARK COMPANY, Windsor Locks, Conn.: Complete illustrated catalogue No. 9, relating to an extensive line of Hand, Platform and Special Trucks, for stores, offices, banks, hotels, libraries, hospitals, warehouses, factories, printers, lithographers, butchers, railroads, transportation companies, brick and stone yards, &c.; also Rubber and Iron Wheel Truck Casters. The illustrations, descriptions and price-lists are clear and well arranged.

CLAUSS SHEAR COMPANY, Fremont, Ohio: Folder illustrating Fetlock Shears, Oxidized Scissors, Flat Pattern Scissors, Razors, Bent Paper Hanger Shears, Oval Blade Tinner Snips and Household Shears.

NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo.: A well arranged catalogue covering the 1909 line of Rugby, Shapleigh Special and Wonder Bicycles. The different models are shown in actual colors. The book covers in a complete manner Bicycles, Bicycle Sundries and Repair Specialties. An insert page following the front cover is devoted to net prices on Bicycles, other goods being priced so as to be subject to a uniform discount. This page is perforated so that it can easily be taken out and filed away for confidential reference.

KEWANEE WATER SUPPLY COMPANY, Kewanee, Ill.: Attractive catalogue of 64 pages, dealing with a system of water supply with individual service in city and country, operated by pneumatic pressure. The equipment employed in the Kewanee system is simple, consisting of a pressure air tank and either hand or power pumps to supply the air and water. It is stated that over 9000 Kewanee systems are now in use, a partial list of which is given in the closing pages of the catalogue.

AMERICAN STEEL & WIRE COMPANY, Chicago, Ill.: Illustrated booklet, under date of March, containing a list of stock carried at its Lake street warehouse in Chicago.

LEFVER ARMS COMPANY, Syracuse, N. Y.: Catalogue illustrating the company's Shotguns, and explaining their shooting qualities and construction.

J. S. WOODHOUSE, 189-191 Water street, New York: Pamphlet S, illustrating specialties in Agricultural Implements for the farm, field, garden, &c.

BATES NUMBERING MACHINE COMPANY, 696-710 Ja-

malca avenue, Brooklyn, N. Y.: Booklet devoted to Typographic Numbering Machines and Automatic Dating Machines.

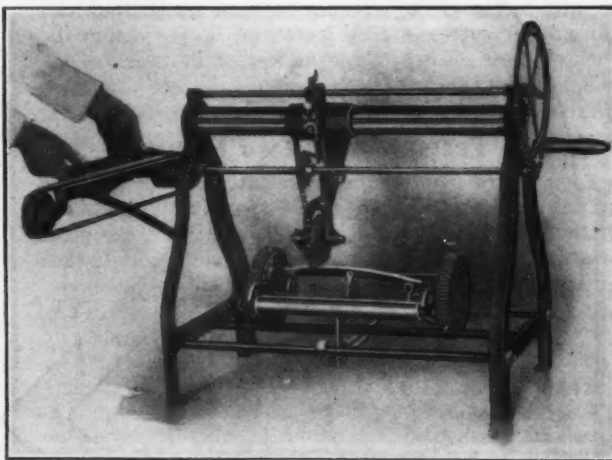
STANDARD WIRE COMPANY, New Castle, Pa.: Catalogue and price-list B, relating to household utensils, Wire Door Mats, Store Display Fixtures, Electric Lamp and Gas Guards, Bank Railings, Grills, Elevator Inclosures, Balcony Railings, Window Guards, Iron Gratings, Advertising Novelties, Wire Baskets and Stands and special work in wire and light iron.

### F. E. Kohler & Co.'s Drain Cleaners.

F. E. Kohler & Co., Canton, Ohio, have added to their product a line of drain cleaners which are manufactured in the usual sizes, viz.: 3, 4, 5, 6, 7 and 8 in. They are said to be made of the best material, the blades being of hard cold rolled bright steel, the shanks malleable and the handles turned at the firm's own woodworking factory.

### Lawn Mower Grinder.

A new machine for sharpening lawn mower knives has just been put on the market by the Luther Bros. Company, Milwaukee, Wis. In this machine the grinding is done on the same principle as in the factory. The mower is held rigidly in an adjustable subframe, which is subject to a very fine adjustment in relation to the grinding wheel. The grinding wheel is carried from a bracket, swinging from a cylindrical head which is turned perfectly true. This insures the grinding wheel taking a cut across each of the blades which is absolute-



Lawn Mower Grinder.

ly true and must be the same on every one of the blades. A feature of this machine to which attention is called is the arrangement for grinding or lapping the lower or fixed blade of the mower perfectly true. This is done by means of a bracket bolted to the side of the machine, which is planed perfectly straight on top and over which runs a belt coated with emery. The blade is taken off the mower and held edge down on the belt. The company claims that by this method it only takes from 1 to 3 min. to true up the most uneven blade. The machine is arranged to run either by power or by hand and will sharpen the blade of any hand lawn mower from end to end.

### Rochester Keyless Automobile Lock.

A convenient combination lock, designed to guard against theft of automobiles, has been got out and is being marketed by the Rochester Safety Lock Company, Rochester, Ind. The form of the device is shown in the accompanying illustration, where it will be seen that a lug or pin projects inwardly from the center of the hasp. In applying the lock, a hole is drilled in the side of the steering bar, one part of which is usually stationary, while the other rotates with the steering wheel. When



the hasp is clasped over the bar the pin, entering the hole, rigidly locks the steering bar and prevents the wheel from turning. The combinations are said to be easily changed without the aid of tools, and can be operated in the dark without removing a glove. It also serves as a padlock for the door of the garage at night. To pre-

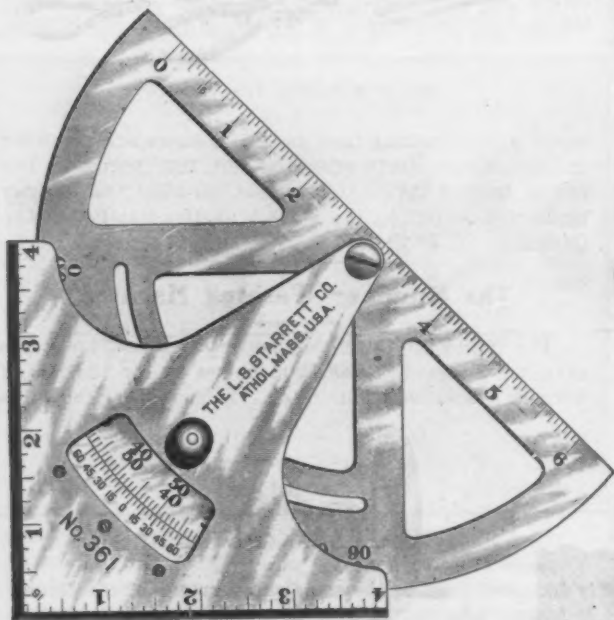


Rochester Keyless Automobile Lock.

vent corrosion, the locks are made of solid bronze inside and out. It is said to be the only three tumbler automobile lock on the market and is sent prepaid on trial upon an order mentioning the automobile license number.

### Draftsman's Protractor.

The L. S. Starrett Company, Athol, Mass., and 132 Liberty street, New York, has devised a high grade draftsman's protractor No. 361, as here shown. It is made of sheet steel, nickel plated, graduated in degrees, figured to read from either right or left, and has vernier to read in 5 min. The three straight edges are graduated in inches and sixteenths, the long member measuring up



Draftsman's Nickel Plated Steel Protractor.

to 6 in. The tool will lie flat on a surface and has a knurled lock nut which is serviceable for lifting. To reverse angles without resetting the user places the opposite straight part of the stock against the T square or straight edge of a drawing board, which will give the same angle right or left. By loosening the lock nut the parts turn freely, thus permitting of quick, easy adjustment to degrees when the sections may be relocked. The outer dimensions of the tool are  $7\frac{1}{4} \times 4$  in., as set for packing singly in double pasteboard box or leather case.

A NEW nest of saws, listed as No. 83, is being put on the market by the Simonds Mfg. Company, Fitchburg, Mass., and Chicago, Ill. It is intended especially for the use of electricians and plumbers. The feature of the outfit is that with a keyhole and compass blade there is included a nail and metal cutting blade. The patented Simonds handle affords a simple, convenient and effective adjustment, allowing any of the three blades to be readily adjusted to any working position that may be desired.

### Diamond Hay Tools.

The Whitman & Barnes Mfg. Company, Chicago, has added to its well-known line of Diamond hay tools two right angle draft carriers, Nos. 12 and 22. The former is for fork use and the latter for use with slings. They are built entirely of steel with the exception of the track wheels and rope sheaves, giving them unusual strength. They will operate on any steel track made, because they require no stop, and the lower truck frames are adjustable to fit steel track of any width. These new goods are shown in the company's Diamond Hay Tool Catalogue, No. 70.

### White Frost Refrigerator.

The Metal Stamping Company, Jackson, Mich., has effected a number of improvements in its White Frost refrigerator as put on the market for this season. Chief among these is a change in the construction which enables a housekeeper to remove quickly every interior part, leaving the walls absolutely empty, which is a great advantage in cleaning. It is stated that the partition between the ice chamber and the provision chamber, the shelf racks, shelves, water tank and all can be



Fig. 1.—The White Frost Refrigerator.



Fig. 2.—Interior of the White Frost Refrigerator.

removed in less than a minute. Other improvements include a seamless brass tube for drain pipe in place of a joined tin or steel tube, with a long wire having a round brush on the end for cleaning. Roller bearing casters are furnished. It is claimed by the manufacturer that the consumption of ice has been reduced to the minimum, and that as low a temperature can be maintained as in any first-class refrigerator now on the market. The circulation of air is effected on scientific principles, the warm air rising and the cold air descending, as indicated in Fig. 2.

### F. and R. Auto and Motor Boat Vise.

The Fulton Machine & Vise Company, Lowville, N. Y., is putting on the market the vise shown herewith. It has steel faced and tempered jaws, all finished parts are nickel-plated, and the other parts are black enameled. The jaws are 2 in. wide, opening 2 in., and the weight of the vise is  $7\frac{1}{2}$  lb., thus permitting the vise to be carried in a tool kit. The vise is double swivel and either swivel can be set in any position desired, allowing work to be held at any angle and always have the use of the entire width of the jaws. Both swivels are fastened or released with one operation of the lever, and when the work is gripped all lost motion is taken up, becoming, it is explained, as rigid as any solid jaw vise. The nut and screw are exposed so they may be easily oiled. The entire body and moving parts are clamped onto the saddle of the vise, this malleable nut having a bearing around the entire outer

edge of the saddle. The malleable iron clamp base is fitted with a steel screw and lever for clamping on the running board of a car or in a small motor boat. The



*F. & R. Auto and Motor Boat Vise.*

end of the clamping screw has a large swivel button which affords a good bearing and prevents the screw sinking into the wood.

### Combination Belting.

The Massachusetts Belting Company, 207 Congress street, Boston, Mass., has brought out a new patented combination belting, composed of parallel strands of specially made steel wires, each strand covered with fine hemp marlin, the strands being bound together at regular intervals by cross strands of hemp fiber. Each strand consists of from 7 to 19 wires, according to the strength or horsepower desired. The theory is that the belt combines the strength of steel with the high coefficient of friction of prepared marlin, resulting in the highest transmission qualities. The belt is connected by specially made hooks or couplings. There is but little stretch, a new 16-strand belt showing under test a stretch of 0.0014 in. for every 1000 lb. load put upon it. A rolling process through which the belt passes after it has been made still further reduces this percentage. In the illustration the new belt is shown; a photograph of the material after use gives an unbroken flat black surface. Among the advantages claimed for the belting is a saving in the size of pulleys, one-half the width of belt being required as compared with common belting, resulting in economy of space and weight, the new belting weighing one-half of leather belt of equal strength, it is stated. Other



*Combination Belting.*

factors claimed are reduced loss from creep, and that the combination belting is affected by neither heat nor moisture. Conveyor belt is made in any desired width. In this form the marlin is free from tar or any other preparation, so as not to affect the material conveyed. Flat combination transmission is manufactured by the company for either English or American systems. Great power, durability and strength are claimed for it. It is easily applied to the drive, either coupled or with an 18-in. splice, and is not affected by heat or moisture. The process of making the belt and the machinery on which it is made is said to be covered by patents in this and foreign countries.

### The H-B Fishing Tackle Box.

The patented fishing tackle box, shown herewith, is 11½ in. long, 8½ in. high and 7½ in. wide. The inner boxes, or partitions, are made to contain sinkers, hooks, swivels, &c., which are thus kept away from the wet lines and reels. The space in the center is for reels or other bulky articles. The box is sold without tools, as fishermen usually prefer equipping the box with tools



*The H-B Fishing Tackle Box.*

suitable for repairing their tackle, as there are a number of combination tools adaptable for this purpose. The box is painted inside and outside, strongly and durably made, and is put on the market by Handlan-Buck Mfg. Company, St. Louis, Mo.

### The Hummer Washing Machine.

The White Lilly Mfg. Company, Davenport, Iowa, has extended its line of washing machines by the addition of the new model here illustrated. This washer, known as



*Hummer Washing Machine.*

the Hummer, is intended to meet the demand for a covered gear machine at a moderate price. Outside of the gear arrangement the Hummer is constructed upon the same general lines that distinguish the other washers made by this company. The gears used, which are exceedingly simple, are completely inclosed in a neat, detachable case mounted on top of the machine. The mechanical movement is described as very accurate and smooth running, being actuated by a wheel crank. In point of construction, operation and efficiency the Hummer is claimed to have distinct advantages.



### Free Spool Fish Line Reels.

A. F. Meisselbach & Bro., 22-28 Prospect street, Newark, N. J., are manufacturing the Takapart and Tripart free spool reels for fishing tackle, here illustrated. Fig. 1 represents the Takapart style, the simple but effective mechanism for regulating free running and reeling being located in the right hand side. No tools are required to take apart either reel for cleaning and oiling, both screw rings with milled edges being removable in a few turns. In free spool reels the spool starts to revolve more quickly at the beginning of the cast because the handle and gears are disengaged. During the cast the spool responds more readily to delicate thumbing because it is free from the momentum of the handle. These reels are automatic, no movement of levers or buttons being necessary, when making a cast or reeling in, reeling beginning instantly without lost motion by means of two cams on a loose pinion which fly outward engaging two lugs in-

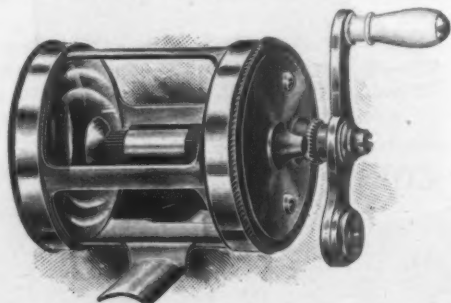


Fig. 1.—Takapart Free Spool Fish Line Reel.

side the interior of the drum, at the first touch of the handle. Another feature is the fixing of the handle in any one of four positions, as illustrated, directly opposite, or at top and bottom, by removing the screw ring and giving the head plate a quarter, half or three-quarter turn and replacing the ring, which locks the plate positively in the desired position. At the left is a friction

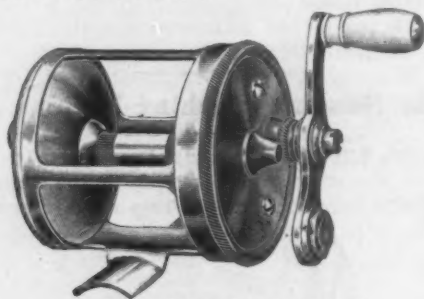


Fig. 2.—Tripart Free Spool Reel.

device, which by turning slightly takes up any subsequent wear, gives more or less tension at any time and enables a beginner to put a slight friction on the spool if found too lively. There is no possibility of stripping gears, as they are always in mesh and additional tension is afforded by pushing a button on the left plate which actuates a ratchet pawl. The spool is made of German

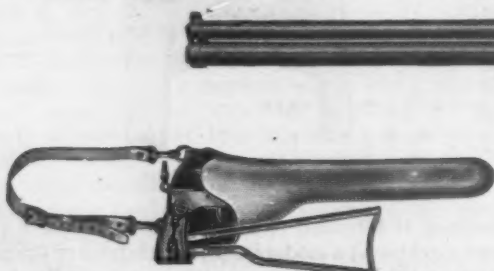


Fig. 2.—Marble's Gun in Leather Holster with Shoulder Strap.

silver for increased strength, and body of reel from a drawn brass shell, polished and nicked, making a compact reel much smaller in size for a given capacity. A characteristic of both reels is the ability to cast without adjusting levers or buttons, and without lost motion reel in. Both reels are similar except that the Takapart has removable plates at each end and the Tripart but

one. The Takapart spool is  $1\frac{1}{2}$  in. wide,  $1\frac{1}{4}$  in. diameter, weighs 8 oz., and capacity is 100 yd. The Tripart, Fig. 2, spool is  $1\frac{1}{2}$  in. wide,  $1\frac{1}{4}$  in. diameter, weighs 7 oz., and carries 80 yd. The house repairs all its reels gratis, no matter how long owned, if repairs are necessitated by actual, fair usage.

### The Yankee Carpet Stretcher and Tack Holder.

The carpet stretcher and tack holder, shown herewith, is designed to facilitate stretching carpets and driving tacks at the same time. It provides a third hand which holds the tack where it is needed and obviates the dan-



The Yankee Carpet Stretcher and Tack Holder.

ger of pounding the fingers. The device is put on the market by the Taylor Mfg. Company, Hartford, Conn., which explains that it is sold at a low price so that the average person who has only a few carpets to lay can afford to buy it. The tools are packed  $\frac{1}{2}$  dozen in a box, with or without handles; 24 boxes or one gross to a case.

### Marble's Game Getter Gun.

The Marble Safety Axe Company, Gladstone, Mich., is offering the gun shown in the accompanying illustrations. It has a .22 caliber rifle barrel and .44 caliber smooth barrel, the barrels being 12-in. long, and the weight of the gun about 35 oz. It shoots .22 short, long and long rifle; .44 shot and .44 round ball. It is pointed out that smokeless powder can be safely used, but that the best results are obtained from semismokeless; also that there is very little recoil on account of the .44 barrel being smooth bore. The gun can be made doubly safe by setting the striker between the firing pins with the hammer at half cock. The striker is held either up or down or "safe" by a concealed spring or plunger, but is easily moved, not working loose or dropping down. The gun is opened by pulling backward on the front of the trigger guard, but cannot be broken accidentally. The extractor partially extracts from both barrels at the same time. The stock locks at any position fixed by the drop adjuster, shown in the small illustration in Fig. 1. It is unlocked by pushing up on the button in front of grips. The stock can be taken off by removing the lower screw

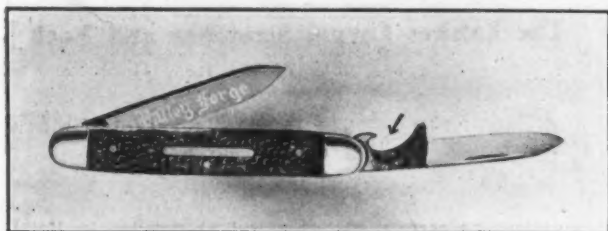


Fig. 1.—Marble's Game Getter Gun.

passing through the grips. It is explained that the grips are large and at right angles to the shooter's arm, so that the gun can be held unusually steady; and that when used as a pistol it balances and shoots excellently. The manufacturer explains that it is impossible for the gun to shoot open, even with the most powerful ammunition, and that either barrel can be replaced.

### Bottle Cap Lifter Pocket Knives.

The Valley Forge Cutlery Company, Newark, N. J., owned by Hermann Boker & Co., New York, has recently put on the market a group of seven or eight pocket knives, each of which contains a combination bottle cap lifter



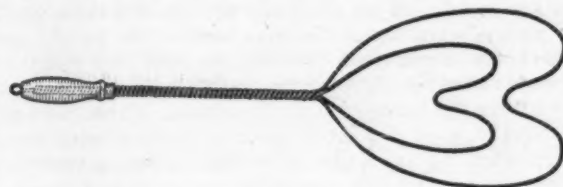
Pocket Knife with Bottle Cap Lifter.

and blade, as illustrated. All but two are jackknife patterns having both two and three blades, with single and double German silver bolsters. Some have two strong wide blades beside the combination blade and the mountings are in stag, ebony and pearl. The blades are made of the best Wardlow cutlery steel by experienced work-

men and the handles are brass lined. The illustration shows a penknife pattern made with both pearl and stag coverings.

### The Gem Carpet Beater.

The accompanying illustration represents a carpet beater, put on the market by Standard Wire Company, New Castle, Pa. The device is made of No. 10 wire,



The Gem Carpet Beater.

either coppered or galvanized. One wire passes completely through the handle with a ring turned on it, to prevent it from coming out. The beaters are put up 1 dozen in a package, wrapped and labeled.

## PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

	5 gal.	10 gal.
Linseed, Western, Raw.....	55 @56	55 @56
State, Raw.....	55 @56	55 @56
City, Raw.....	56 @57	56 @57
Bottled, 1¢ gal. advance on Raw.....	57 @58	57 @58
Raw, Calcutta, in bbls.....	75 @	75 @
Lard, Prime, Winter.....	78 @80	78 @80
Extra No. 1.....	57 @58	57 @58
No. 1.....	48 @49	48 @49
Cotton-seed, Crude, f.o.b. mill.....	33 @33½	33 @33½
Summer, Yellow, prime.....	5.60@5.65	5.60@5.65
Summer, White.....	5.70@5.90	5.70@5.90
Yellow, Winter.....	5.90@6.00	5.90@6.00
Tallow, Acidless.....	56 @	56 @
Menhaden, Brown, Strained.....	33 @34	33 @34
Northern Crude.....	21 @22	21 @22
Southern.....	21 @22	21 @22
Light Strained.....	33 @34	33 @34
Bleached Winter.....	36 @	36 @
Cocunut, Ceylon.....	6 @6½	6 @6½
Cochin.....	6 @6½	6 @6½
Cod, Domestic, Prime.....	38 @	38 @
Newfoundland.....	40 @	40 @
Red Elaine.....	43 @47	43 @47
Saponified.....	54 @56	54 @56
Olive, Yellow.....	1.50@1.60	1.50@1.60
Neatsfoot, Prime.....	37 @	37 @
Palm, Lagos.....	57 @58	57 @58

### Mineral Oils—

	25 gal.	50 gal.
Black, 29 gravity, 25@30 cold test.....	13 @13½	13 @13½
29 gravity, 15 cold test.....	13½ @14	13½ @14
Summer.....	12½ @13	12½ @13
Cylinder, light filtered.....	20½ @21	20½ @21
Dark, filtered.....	18 @19	18 @19
Paraffine, 903-907 sp. gravity.....	14½ @15	14½ @15
903 sp. gravity.....	13½ @14	13½ @14
903 sp. gravity.....	11 @11½	11 @11½
Red.....	13½ @14	13½ @14

### Miscellaneous—

	ton	50 lb.
Barites:		
White, Foreign.....	18.50@20.50	18.50@20.50
Amer., floated.....	17.00@18.00	17.00@18.00
Off color.....	12.50@15.00	12.50@15.00
Chalk in bulk.....	3.00@3.40	3.00@3.40

	100 lb.	50 lb.
China Clay, Imported.....	11.50@12.00	11.50@12.00
Cobalt, Oxide.....	1.45@2.60	1.45@2.60
Whiting, Commercial.....	100 lb. 45@50	100 lb. 45@50
Gilders.....	100 lb. 52@.64	100 lb. 52@.64
Ex. Gilders.....	100 lb. 56@.68	100 lb. 56@.68
Putty, Commercial.....	100 lb. 1.70@2.00	100 lb. 1.70@2.00
In bladders.....	1.20@1.45	1.20@1.45
In bbls. or tubs, 100 lb.....	2.65@3.25	2.65@3.25
In 1 lb to 5 lb tins.....	1.50@1.90	1.50@1.90
In 12½ to 50 lb tins.....	1.50@1.90	1.50@1.90

	gal.	100 lb.
Spirits Turpentine.....	40 @40½	40 @40½
In Machine bbls.....	40 @41	40 @41
In Oil bbls.....	40 @41	40 @41

	100 lb.	50 lb.
Glue—		
Cabinet.....	12 @15	12 @15
Common Bone.....	7½ @9	7½ @9
Extra White.....	18 @24	18 @24
Fish, liquid, 50 gal. bbls., per gal.....	60 @1.20	60 @1.20
Foot Stock, White.....	12 @14	12 @14
Foot Stock, Brown.....	9 @11	9 @11
German Common Hide.....	10 @12	10 @12
German Hide.....	12 @18	12 @18
French.....	10 @16	10 @16
Irish.....	13 @26	13 @26
Low Grade.....	10 @12	10 @12
Medium White.....	14 @19	14 @19

	100 lb.	50 lb.
Gum Shellac—		
Bleached, Commercial.....	17 @17	17 @17
Bone Dry.....	20 @22	20 @22
Button.....	20 @23	20 @23
Diamond I.....	20 @23	20 @23
Fine Orange.....	23 @24	23 @24
A. C. Garnet.....	16 @17	16 @17
G. A. L. Garnet.....	16 @17	16 @17
Kala Button.....	12 @13	12 @13
D. C. Garnet.....	20 @23	20 @23
Octagon B.....	24 @26	24 @26
T. N.....	15½ @16½	15½ @16½
V. S. O.....	27 @28	27 @28

	100 lb.	50 lb.
Colors in Oil—		
Black, Lampblack.....	12 @14	12 @14
Blue, Chinese.....	36 @46	36 @46
Blue, Prussian.....	32 @36	32 @36

	100 lb.	50 lb.
Blue, Ultramarine.....	12 @16	12 @16
Brown, Vandyke.....	11 @14	11 @14
Green, Chrome.....	12 @16	12 @16
Green, Paris.....	24 @24	24 @24
Sienna, Raw.....	12 @15	12 @15
Sienna, Burnt.....	11 @14	11 @14
Umber, Raw.....	11 @14	11 @14
Umber, Burnt.....	11 @14	11 @14

### White and Red, Lead &c.—

	100 lb.	50 lb.
Lead, English white, in Oil.....	10½ @10½	10½ @10½
Lead, American White:		
Dry and in Oil, 100, 250 and 500 lb kegs.....	6½	6½
Dry and in Oil, 25 and 50 lb kegs.....	7	7
Dry and in Oil, 12½ lb kegs.....	7½	7½
In Oil, 25 lb tin pails.....	7½	7½
In Oil, 12½ lb tin pails.....	7½	7½
In Oil, 1, 2, 3 and 5 lb tin cans, am't.....	8½	8½
Red Lead and Litharge:		
In 100 lb kegs.....	7	7
In 25 and 50 lb kegs.....	7½	7½
In 12½ lb kegs.....	7½	7½
In lots of less than 500 lbs., ½¢ per lb advance over above prices of White and Red Lead and Litharge.....		
Lead, American, Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.....		

### Zinc, Dry—

	100 lb.	50 lb.
American, dry.....	5¼ @5½	5¼ @5½
Red Seal (French process).....	5¼ @7	5¼ @7
Green Seal.....	7¼ @7½	7¼ @7½
German Red Seal (French process).....	7 @7¼	7 @7¼
Green Seal.....	7¼ @7½	7¼ @7½
White Seal.....	8¼ @9	8¼ @9
French, Red Seal.....	8¼ @8½	8¼ @8½
Green Seal.....	10½ @10½	10½ @10½

### Dry Colors—

	100 lb.	50 lb.
Black, Carbon.....	8¼ @10	8¼ @10
Black Drop, American.....	3½ @8	3½ @8

	100 lb.	50 lb.
Black Drop, English.....	5 @15	5 @15
Black, Ivory.....	14 @20	14 @20
Lamp, commercial.....	4 @8	4 @8
Blue, Celestial.....	4 @8	4 @8
Blue, Chinese.....	30 @31	30 @31
Blue, Prussian, Domestic.....	28 @30	28 @30
Blue, Ultramarine.....	5 @15	5 @15
Brown, Spanish.....	3½ @1	3½ @1
Carmine, No. 40.....	33 @33.10	33 @33.10
Green, Chrome, ordinary.....	3¼ @5	3¼ @5
Green, Chrome, pure.....	17 @25	17 @25
Other, American.....	12 @15.00	12 @15.00
American Golden.....	4 @5	4 @5
French.....	14 @2	14 @2
Foreign Golden.....	3 @4	3 @4
Orange Mineral, English.....	10 @12	10 @12
French.....	12 @13	12 @13
German.....	12 @13	12 @13
American.....	8½ @10	8½ @10
Red, Indian, English.....	5 @7	5 @7
American.....	3 @3½	3 @3½
Red, Turkey, English.....	4 @10	4 @10
Red, Tuscan, English.....	7 @10	7 @10
Red, Venetian, Amer.....	30.75@31.50	30.75@31.50
English.....	100 lb \$1.15@1.00	100 lb \$1.15@1.00
Sienna, Italian, Burnt and Powdered.....	3 @9	3 @9
Italian, Raw, Powdered.....	3 @7	3 @7
American, Raw.....	2¼ @3	2¼ @3
American Burnt and Pow'd.....	2¼ @3	2¼ @3
Talc, French.....	18 @25.00	18 @25.00
American.....	15.00@25.00	15.00@25.00
Terra Alba, French.....	100 lb .80@1.00	100 lb .80@1.00
English.....	100 lb .90@1.00	100 lb .90@1.00
American.....	100 lb .75@.80	100 lb .75@.80
American.....	100 lb .70@.75	100 lb .70@.75
Umber, T'key, Bnt. & Pow'd.....	2¼ @3	2¼ @3
Turkey, Raw and Powdered.....	2¼ @3	2¼ @3
Burnt, American.....	2 @2¼	2 @2¼
Raw, American.....	2 @2¼	2 @2¼
Yellow, Chrome, Pure.....	12½ @14	12½ @14
Oxide Red, American.....	2 @7½	2 @7½
Vermilion, English, Imported.....	.70	.70
Chinese.....	30.00@1.00	30.00@1.00

# THE IRON AGE

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# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are usually given to larger buyers.

**Special Goods.**—Quotations printed in small type (Roman) relate to goods of particular manufacturers, who request the publication of the prices named and are responsible for their correctness. They usually represent the prices to the small trade, lower prices being generally obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33%  
North's.....10%  
Upson's Patent,  $\frac{1}{2}$  doz., \$29.50.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....10%  
Ives' Stop Head Screws and Washers.....10%  
Taplin's Perfection.....10%

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anti-Rattlers—

Fernald Mfg. Co., Burton Anti-Rattlers,  $\frac{1}{2}$  doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50.  
Fernald Quick Shifter,  $\frac{1}{2}$  doz. pairs.....\$2.00@3.00

## Anvils—American—

Eagle Anvil.....\$3 @ \$4  
Hay-Budden, Wrought.....\$3 @ \$4  
Trenton.....\$3 @ \$4

## Imported—

Swedish Solid Steel Paragon,  $\frac{1}{2}$  doz.....\$10@10%  
Steel-a Solid Steel Sisco, Superior,  $\frac{1}{2}$  doz.....\$10@10%  
Lester Wright & Sons,  $\frac{1}{2}$  doz, \$1 to \$10, 11¢; 350 to 600 lb., 11¢.

## Anvil, Vice and Drill—

Millers Falls Co., \$18.00.....15¢@10%

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

Com. Double Spur.....30%  
Jennings' Patn., Bright, 6.5¢@7.0¢  
Black Lip or Blue.....6.5¢@6.5¢  
Boring Mach. Augers.....70%  
Car Bits, 12-in. twist.....40¢@10%  
Ford's Auger and Car Bits.....40¢@10%  
Ft. Washington Auger Co., Concord's.....35%  
Forster Pat. Auger Bits.....25%  
C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list.....25¢@75¢  
No. 20, B. Jennings' list.....25¢@75¢  
Russell Jennings' list.....25¢@13¢@24¢  
L'Hommedieu Car Bits.....15¢  
Mayhew's Countersink Bits.....45¢  
Pugh's Black.....20¢  
Pugh's Jennings' Pattern.....35¢  
Snell's Auger Bits.....60¢  
Snell's Bell Hangers' Bits.....60¢  
Snell's Car Bits, 12-in. twist.....60¢  
Snell's King Auger Bits.....50¢  
Swan's.....65¢@10%  
Swan's, Jennings' Pattern.....60¢  
Wright's Jennings' Bits.....60¢

## Bit Stock Drills—

See Drills, Taper.

## Expansive Bits—

Clark's Pattern, No. 1,  $\frac{1}{2}$  doz., \$26;  
No. 2, \$18.....60¢@10%  
Ford's, Clark's Pattern.....60¢@10%  
C. E. Jennings & Co., Steer's Pat. 25¢  
Lavigne Pat., small size, \$18.00; large size, \$26.00.....60¢@10%  
Swan's.....60%

## Gimlet Bits—

Common Dbl. Cut.....\$3.00@3.25  
German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.75

## Hollow Augers—

Bonney Pat., per doz., \$5.50@6.00  
Ames.....20¢@10%  
Universal.....20%

## Ship Augers and Bits—

C. E. Jennings & Co.:  
L'Hommedieu's.....6¢  
Watrous'.....35¢@74¢  
Snell's.....48%

## Awl Hfts—See Handles, Mechanics' Tool.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75@3.00  
Unhanded, Shlided.....gro. \$3.00@3.60  
Unhanded, Patent.....gro. \$3.00@3.60  
Peg Awls:  
Unhanded, Patent.....gro. \$1.31@1.40  
Unhanded, Shlided.....gro. \$1.31@1.40  
Scratch Awls:  
Handled, Com.....gro. \$3.50@4.00  
Handled, Rocket.....gro. \$11.50@12.00  
Elmore Tool Mfg. Co.:  
Tinners' and Brad Awls.....55¢@75¢  
Scratch Awls.....60%

## Awl and Tool Sets—See Sets, Axl and Tool.

## Axes—

Single Bit, base weights: Per doz.  
First Quality.....\$4.75@5.00  
Second Quality.....\$4.25@4.50

Double Bit, base weights:  
First Quality.....\$7.00@7.50  
Second Quality.....\$6.50@6.75

## Axle Grease—

See Grease, Axle.

## Axles—

Concord, Loose Collar.....4¢@4¢  
Concord, Solid Collar.....4¢@4¢  
No. 1 Common, Loose.....3¢@4¢  
No. 1 1/2 Com., New Style.....4¢@4¢  
No. 2 Solid Collar.....4¢@4¢  
Half Patent:  
Nos. 7, 8, 11 and 12.....70%  
Nos. 13 to 14.....70%  
Nos. 15 to 18.....70¢@10¢@70¢@10¢  
Nos. 19 to 22.....70¢@10¢@70¢@10¢

## Boxes, Axles—

Common and Concord, not turned.....lb., 5¢@6¢  
Common and Concord, turned, lb., 6¢@7¢  
Half Patent.....lb., 9¢@10¢

## Bait—

See Fishing—

## Bait—

See Fishing—

## Bait—

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## Hand—

Polished, Brass.....60¢@60¢@10%  
White Metal.....60¢@60¢@10%  
Nickel Plated.....50¢@10%  
Sicks.....50¢@10%  
Cone's Globe Hand Bells.....35¢@35¢

## Miscellaneous—

Farm Bells.....lb., 2¢@2¢  
Church and School.....60¢@60¢@10%

## Belting—

First Quality, Ex. Hy., Strictly Short Lap.....60¢@19%  
Standard.....70¢@10¢@70¢@10¢  
Light Double.....75¢@10%  
Cut Leather Lacing.....45¢@50%  
Leather Lacing Sides, per sq. ft. 25¢

## Rubber—

Competition (Low Grade).....70¢@10¢@75%  
Standard.....60¢@10¢@70%  
Best Grades.....40¢@50%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%

## Bicycle Goods—

John S. Lang's Son & Co.'s 1908 list:  
Chain, Parts, Spokes.....50%  
Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks Tackle—

Common Wooden.....75¢@75¢  
B. & L. B. Co.:  
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50¢@10%  
Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50¢@10%; Wire Rope Snatch, 50%

Lane's Patent Automatic Lock and Junior  
See also Machines, Hoisting.

## Boards, Stone—

Paper and Wood Lined.....55%  
Embossed.....55%

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Kenell & Easer Co.....33%@10%

## Bolts

Carriage, Machine, &c.—Common Carriage (cut thread):  
% x 6 and smaller.....75¢@10%  
Larger and longer.....70¢@10%  
Common Carriage (rolled thread):  
% x 6, smaller and shorter, 75¢@10¢  
Phila. Eagle, \$3.00 list.....80¢@—  
Bolt Ends, with C. & T. Nuts, 70¢@10%

Machine (Cut Thread):  
% x 1 and smaller.....75¢@10¢  
Larger and longer.....70¢@10¢

## Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knobs:  
Inch... 3 4 5 6 8  
Per doz. \$0.30 .35 .45 .60 .80  
Cast Iron Spring Foot, Jap'd:  
Inch... 6 8 10  
Per doz. \$1.20 1.50 2.25  
Cast Iron Chain, Flat, Japanned:  
Inch... 6 8 10  
Per doz. \$1.00 1.40 1.65  
Cast Iron Flat Shutter, Jap'd, Brass Knobs:  
Inch... 6 8 10  
Per doz. \$0.75 .95 1.25  
Wrought Barrel Japanned, 80¢@10¢@80¢@10¢  
Barrel Bronzed.....60¢@10%  
Spring.....70¢@10¢@70¢@10%  
Shutter.....50¢@50¢@10¢@50%  
Square Neck.....75¢@75¢@10%  
Square.....70¢@10¢@70¢@10%  
Ives' Mortise.....19%  
Ives' Wrought Metal.....10%

## Expansion—

F. H. Evans' Crescent.....40¢@60%  
Richards Mfg. Co.....55¢@10%  
Star Expansion Bolt Co.:  
Star Lag Screw Type.....60¢@10¢@75%  
Star Wood Screw Type.....40%  
Star Machine, Single Wedge.....60%

Star Machine, Double Wedge.....60%

Steward & Koman Mfg. Co.:  
Style No. 13, Double.....60%  
Style No. 1, Single.....60%  
Style No. 100, Dbl. Jaw, Single.....35%  
Lag Screw.....66%  
Plow and Stove—

Plow.....65¢@5¢@70%  
Stove.....85¢@85¢@5%

## Tire—

Common Iron.....80%  
Norway Iron.....80%  
American Screw Co.:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....82%  
Bay State, list Dec. 28, '89.....80%  
Franklin Moore Co.:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....82%  
Eclipse, list Dec. 28, '89.....80%  
Russell, Burdall & Ward Bolt & Nut Co.:  
Empire, list Dec. 28, '89.....80%  
Norway Phila., list Oct. 16, '84.....82%  
Eagle.....82%  
Shelton Co.:  
Tiger Brand, list Dec. 28, '89.....80%  
Phila., Eagle, list Oct. 16, 1881.....82%  
Upson Nut Co.:  
Tire Bolts.....72%  
Borers, Ring—

Borers Bung, Ring, with Handle:  
Inch.....1 1/4 1 1/2 1 3/4 2  
Per doz. \$4.80 5.00 6.40 8.00  
Inch.....2 1/4 2 1/2  
Per doz. \$8.65 11.50  
Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....25%  
Langdon, New Langdon and Langdon Improved, 20¢@10%; Langdon Acme.....15¢@10%  
Perfection.....40%  
Seavey.....15%

## Braces—

Common Ball American \$1.50@1.75  
Barber's.....50¢@10¢@60¢@10%  
Fray's Genuine Spool.....60%  
Fray's No. 61, 166, 226, 614.....50%  
C. E. Jennings & Co.....50¢@5%  
Mayhew's Ratchet.....60%  
Mayhew's Quick Action Hay Pat. 50%  
Millers Falls Drill Brackets.....25¢@10%  
F. S. & W. Co., Peck's Pat.....60¢@10%

## Brackets—

Wrought Steel.....80¢@80¢@5%  
Bradley Metal Clasp.....80¢@10¢@80¢@5%  
Griffin's Pressed Steel.....75¢@75¢@10%  
Griffin's Folding Brackets.....70¢@10%  
Stanley's Pressed Steel.....70¢@10%  
Stanley's Folding Brackets.....70¢@10%  
Taplin Victor Handy Egg Beater Bracket.....\$1.50 @ \$2.00

## Bright Wire Goods—

See Wire and Wire Goods.

## Broilers—

Kilbourne Mfg. Co.....75¢@20%  
Wire Goods Co.....75%

## Buckets, Galvanized—

Mfr's list, price per gross:  
Quart. 10 12 14  
Water, Light, \$28.35 30.75 34.75  
Water, Ex. Hvy. 46.85 49.35 53.25  
Fire, Rd. Btm. 33.50 35.97 39.90  
Well.....37.35 41.35 45.35

## Bull Rings—See Rings, Bull.

## Butts—

Wrought, High List, Oct. 16, '84.....65%  
Cast Brass, Tiebout's.....40¢@10%

## Cast Iron—

Fast Joint, Broad.....40¢@10¢@50%  
Fast Joint, Ex. Hvy. 40¢@10¢@50%  
Loose Joint.....70¢@10¢@75%  
Loose Pin.....70¢@10¢@75%  
Mayer's Hinges.....70¢@70¢  
Parliament Butts.....70¢@70¢

## Wrought Steel—

BRIGHT:  
Light Narrow, Light Reversible.....75¢@10%  
Reversible and Broad, 75¢@10%  
Loose Joint, Narrow, Light Inside Blind, &c.....75%  
Back Flaps, Table Chest, 70%  
BROZED:  
Light Narrow, Loose Pin.....55%  
Light, Loose Pin, Ball Tip.....65%  
Broad.....55%

Net Prices

Extra, 5¢@





10-lb. cans,  
10 in case... 7¢ 7¢ 6¢  
10-lb. cans, less  
than 10... 10¢ 10¢ 8¢  
Less quantity... 10¢ 10¢ 8¢  
NOTE.—In lots 1 to 3 tons a discount of 10% is given.

**Extensions, Bit—**  
Ford's Auger Bit Extensions... 40¢ & 5¢  
**Extractors, Lemon Juice—**  
—See Squeezers, Lemon.

**Fasteners, Blind—**  
Zimmerman's Jap'd and Galv., 50 & 57; Bronze and Plated... 50¢  
Walling's... 50¢  
Upon's Patent... 40¢

**Cord and Weight—**  
Ives, # gro., \$1.08... 10¢  
Titan, # gro., \$0.06... 10¢

**Corrugated—**  
Acme Corrugated Fasteners... 70¢

**Faucets—**  
Cork Lined... 50¢ & 10¢ & 60¢

**Metallic Key, Leather Lined... 60¢ & 10¢ & 70¢**

**Red Cedar... 40¢ & 50¢ & 10¢ & 60¢**

**Petroleum... 70¢ & 10¢ & 75¢**

**B. & L. B. Co.: 60¢ & 10¢**

**Star... 60¢**

**West Lock... 50¢ & 10¢**

**John Sommer's Peerless Tin Key... 40¢**

**John Sommer's Boss Tin Key... 50¢**

**John Sommer's Victor Mil. Key... 50¢ & 10¢**

**John Sommer's Duplex Metal Key... 60¢**

**John Sommer's Diamond Lock... 40¢**

**John Sommer's I. X. L. Cork Lined... 50¢**

**John Sommer's Reliable Cork Lined... 50¢ & 10¢**

**John Sommer's Chicago Cork Lined... 50¢**

**John Sommer's O. K. Cork Lined... 50¢**

**John Sommer's No Brand, Cedar... 50¢**

**John Sommer's Perfection, Cedar... 40¢**

**Self Measuring: 40¢**

**Enterprise, Self Measuring and Pump, # doz., \$36.00... 40¢ & 10¢**

**Lane's, # doz., \$36.00... 40¢ & 10¢**

**National Measuring, # doz., \$36.00... 40¢ & 10¢**

**Felloe Plates—**  
See Plates, Felloe.

**Files— Domestic—**  
List Nov. 1, 1899.

**Best Brands... 70¢ & 10¢ & 75¢ & 10¢**

**Standard Brands... 75¢ & 10¢ & 80¢ & 10¢**

**Lozier Grade... 75¢ & 10¢ & 80¢ & 10¢**

**Dixton's Superfine... 60¢**

**Gold Medal... 70¢**

**McCaffrey's American Standard... 60¢ & 10¢ & 10¢**

**Imported—**

**Stubs' Tapers, Stubs' list, July 21, '97... 33¢ & 40¢**

**Fixtures, Fire Door—**

**Richards Mfg. Co.: 43.75**

**Universal, No. 103; Special, No. 104... 50¢**

**Fusible Links, No. 96... 50¢**

**Expansion Bolts, No. 107... 50¢ & 10¢**

**Grindstone—**

**Net Prices: 15 17 19 21**

**Inch... 15 17 19 21**

**Per doz... \$3.00 3.55 4.15 4.65**

**Peck, Stow & Wilcox Co.: 15 17 19 21**

**In... \$1.00 1.40 1.75 5.50 6.50... 30¢**

**Reading Hardware Co... 60¢**

**Fadder Squeezers—**  
See Compressors.

**Forks—**

**American Fork & Hoe Co.: 70¢ & 5¢**

**Iowa Dig-Ezy Potato... 45¢ & 20¢ & 12¢**

**Hay, Regular, 4-time... 60¢ & 7¢ & 5¢**

**Champion, Hay... 60¢ & 12¢**

**Acme, Hay... 60¢ & 20¢**

**Manure, Regular, 4-time... 65¢ & 5¢**

**Manure, Regular, 5 and 6 time... 70¢**

**Champion, Manure... 65¢ & 5¢**

**Columbia, Manure... 70¢**

**Acme, 4-time... 60¢ & 10¢ & 5¢**

**Round Shoulder Header, 4-time... 65¢**

**Champion, Header... 65¢**

**Dakota, Header... 65¢**

**Kansas, Header... 65¢**

**Wood, Barley... 65¢**

**Steel, Barley... 65¢**

**Columbia, Spading... 70¢ & 7¢ & 5¢**

**Frames— Wood Saw—**

**White, 8' x 1' Bar, per doz. 75¢ & 10¢**

**Red, 8' x 1' Bar, per doz. \$1.00 & 1.25**

**Red, Dbl. Brace, per doz. \$1.50 & 1.80**

**Freezers, Ice Cream—**

**Qt... 1 2 3 4 6**

**Each... \$1.25 \$1.60 \$1.90 \$2.20 \$2.50**

**Fruit and Jelly Presses—**  
See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.**

**Fuse— Per 1000 Feet.**

**Hemp... \$2.75**

**Cotton... 3.20**

**Waterproof Rgl. Taped... 3.65**

**Waterproof Dbl. Taped... 4.10**

**Waterproof Tpl. Taped... 5.15**

**Gates, Molasses and Oil—**

**Stebbins' Pattern... 80¢ & 60¢ & 5¢**

**Gauges—**

**Marking, Mortise, &c. \$0.50 & 50¢ & 10¢**

**Chapin-Stephens Co.: 50¢ & 50¢ & 10¢**

**Marking, Mortise, &c. \$0.50 & 50¢ & 10¢**

**Dixton's Marking, Mortise, &c. \$0.50 & 50¢ & 10¢**

**Wire, Brown & Sharp's... 35¢**

**Wire, Morse's... 25¢**

**Wire, P. S. & W. Co... 35¢**

**Gimlets— Single Cut—**  
Numbered assortments, per gro.  
Nail, Metal, No. 1, \$2.00; 2, \$2.30  
Spike, Metal, No. 1, \$1.00; 2, \$1.30  
Nail, Wood Handled, No. 1, \$2.30; 2, \$2.60  
Spike, Wood Handled, No. 1, \$1.30; 2, \$1.60

**Glass, American Window**  
See Trade Report.

**Glasses, Level—**  
Chapin-Stephens Co... 65¢ & 65¢ & 10¢  
Dixton & Sons... 60¢ & 10¢

**Glue, Liquid Fish—**  
Bottles or Cans, with Brush,  
25¢ & 10¢ & 50¢

**Elwell's... 50¢**

**Grease, Axle—**  
Common Grade... gro. \$6.00 & \$6.50

**Dixton's Everlasting, 10-lb. pails, ea. 55¢; in boxes, # doz., 1 lb. \$1.20**

**2 lb... \$2.00**

**Helmet Hard Oil... \$2.00**

**Griddles, Soapstone—**  
Pike Mfg. Co... 33¢ & 33¢ & 10¢

**Grinders—**

**Pike Mfg. Co.: 33¢ & 33¢ & 10¢**

**Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power). 33%**

**Mower Knife and Tool, \$5.00. 40¢ & 10¢**

**Royal Mfg. Co.: 40¢**

**Hand and Foot Power, each, No. 1, \$1.75; 1A, \$2.50; 10, \$5.00**

**Sickle Grinders, each, No. 20, \$5.00; 20A, \$6.00; 20A Combined, \$6.50**

**Disc Grinders, each, \$2.50... 40¢**

**Grindstones—**

**Pike Mfg. Co.: 33¢ & 33¢ & 10¢**

**Improved Family Grindstones, # inch, # doz., \$2.00... 33%**

**Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted... 40%**

**Grips, Nipple—**

**Perfect Nipple Grips... 40¢ & 10¢ & 2¢**

**Halters and Ties—**

**Cow Ties... 70¢ & 10¢**

**Bridgeport Chain Co.: 35¢ & 2¢ & 40¢**

**Triumph Coil and Halters... 45¢ & 50¢ & 40¢**

**Brown Coil and Halters... 45¢ & 50¢ & 40¢**

**Brown Cow Ties... 50¢ & 50¢ & 10¢ & 5¢**

**Brown Tie Outs... 70¢ & 10¢ & 75¢ & 40¢**

**Covert Mfg. Co.: 30¢ & 3¢**

**Web... 30¢ & 3¢**

**Jute Rope... 30¢ & 3¢**

**Sisal Rope... 20¢**

**Cotton Rope... 45¢**

**Hemp Rope... 45¢**

**Oneida Community: 40¢ & 40¢ & 5¢**

**Am. Coil and Halters... 40¢ & 40¢ & 5¢**

**Am. Cow Ties... 45¢ & 50¢**

**Niagara Coil and Halters... 45¢ & 50¢ & 5¢**

**Niagara Cow Ties... 45¢ & 50¢ & 10¢ & 5¢**

**Hammers—**

**Handled Hammers—**

**Heller's Machinists... 35¢ & 10¢ & 5¢ & 10¢ & 5¢**

**Heller's Farriers... 40¢ & 50¢ & 10¢ & 5¢**

**Peck, Stow & Wilcox Co.: 40¢ & 10¢ & 50¢**

**Crucible Steel... 40¢ & 10¢ & 50¢**

**Farriers... 40¢ & 10¢ & 50¢**

**Riveting... 40¢ & 10¢ & 50¢**

**Machinists... 60¢ & 40¢**

**Blacksmiths... 50¢**

**Elmore Shoemakers' Hammers... 75¢**

**Fayette B. Plumb: 40¢ & 2¢ & 40¢ & 12¢**

**A. E. Nail... 40¢ & 2¢ & 40¢ & 12¢**

**Eng. and B. S. Hand... 50¢ & 10¢ & 50¢ & 5¢**

**Machinists' Hammers... 60¢ & 10¢ & 5¢**

**Rivet and Timbers... 40¢ & 7¢ & 40¢ & 12¢ & 5¢**

**Victor Magnetic Tack, # gro... \$1.75**

**Heavy Hammers and Sledges—**

**Under 3 lb., per lb., 50¢... 80¢ & 10¢**

**3 to 5 lb., per lb., 40¢... 80¢ & 10¢ & 10¢**

**Over 5 lb., per lb., 30¢... 80¢**

**Over 5 lb., per lb., 30¢... 80¢ & 10¢ & 10¢**

**Handles—**

**Agricultural Tool Handles**

**Axe, Pick, &c... 60¢ & 10¢ & 60¢ & 10¢ & 5¢**

**Hoe, Rake, &c... 40¢**

**Fork, Shovel, Spade, &c... 40¢**

**Long Handles... 40¢**

**D Handles... 40¢**

**Cross-Cut Saw Handles—**

**Atkins'... 40¢**

**Dixton's Handles and Saw Tabs... 45¢**

**Mechanics' Tool Handles—**

**Auger, assorted... gro. \$3.00 & \$3.50**

**Brad. Axl... gro. \$1.65 & \$1.75**

**Chisel Handles, Ass'd, per gro.: 2.65; Hickory... \$2.15 & 2.40**

**Socket Firming, Apple, \$1.75 & 1.95; Hickory... 1.60 & 1.75**

**Socket Framing, Hickory... \$1.60 & 1.75**

**File, assorted... gro. \$1.30 & \$1.40**

**Hammer, Hatchet, &c... 60¢ & 10¢ & 60¢ & 10¢ & 5¢**

**Hand Saw, Varnished, doz., 80¢ & 5¢; Not Varnished... 65¢ & 75¢**

**Plane Handles: Jack, doz., 90¢; Fore, doz... 45¢**

**Chapin-Stephens Co.: 20¢ & 30¢ & 10¢**

**Chisel... 20¢ & 30¢ & 10¢**

**File and Awl... 20¢ & 30¢ & 10¢**

**Saw and Plane... 20¢ & 30¢ & 10¢**

**Screw Driver... 20¢ & 30¢ & 10¢**

**Milner Falls Adj. and Ratchet Auger... 15¢ & 10¢**

**Handles: Nicholson Simplicity File Handle... # gro. \$0.85 & \$1.50**

**J. L. Osgood: Indestructible File and Tool, # gro., No. 1, 1.00; No. 2, 1.25; No. 3, 1.50; No. 4, 1.75; No. 5, 2.00... gro. lots 10¢**

**W. A. Zelnicker Supply Co.: Hammer, # doz., 12 in., \$2.00; 14 in., \$2.00; 16 in., \$2.30; 18 in., \$2.50; 20 in., \$2.70; 22 in., \$3.00; 24 in., \$3.30; 26 in., \$3.50; 30 in., \$3.80.**

**Sledge, # doz., oval, 30 in., \$3.50; octagon, 30 in., \$3.80; 36 in., \$4.00; 40 in., \$4.30.**

**Axe, # doz., 28 to 34 in., \$5.60; 36 in., \$5.80.**

**Adze, # doz., 36 in., \$5.80; 36 in., \$7.80.**

**Pick, # doz., R. R. 36 in., \$8.00; coal, 34 in., \$5.80.**

**Hatchet, # doz., 12 to 14 in., \$2.00.**

**Hangers—**

**NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.**

**Chicago Spring Butt Co.: 25¢**

**Friction... 25¢**

**Chisholm & Moore Mfg. Co.: 25¢**

**Big Twin... 25¢**

**Baggage Car Door... 50¢**

**Elevator... 30¢**

**Railroad... 50¢**

**Hoes— Eye—**  
*Scovill and Oval Pattern*, 60¢ 10¢ 60¢ 10¢ 10¢  
*Grub, list Feb. 23, 1899*, 70¢ 10¢ 70¢ 10¢ 10¢  
D. & H. Scovill, 27½¢  
Am. Fork & Hoe Co. (Scovill Pat-  
tern) 60¢ 10¢ 60¢ 10¢ 10¢

**Handled—**  
Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50  
Star Double Bit, \$2.50  
American Fork & Hoe Co.:  
Regular, Cultivator, 75¢ 10¢ 75¢ 10¢ 75¢  
Crescent, Cultivator, 75¢ 10¢ 75¢ 10¢ 75¢  
Mattock, Senior, 70¢  
Mattock, Junior, 70¢  
Sprouting, 50¢  
Tobacco, Harper's, 60¢ 10¢ 15¢ 10¢  
Warren, 55¢ 10¢ 10¢ 10¢  
Ivanhoe, 65¢ 10¢ 10¢ 10¢  
Cultivator, B. B. 60¢ 70¢ 10¢ 10¢ 10¢  
Cultivator, B. B. 60¢ 70¢ 10¢ 10¢ 10¢  
Weeding, Acme, 72½¢ 10¢ 10¢ 10¢  
Scuffle, Lightning, 60¢ 5¢

**Hoisting Apparatus—**  
See Machines, Hoisting.

**Holders— Bit—**  
Angular, ½ doz, \$2.00, 45¢ 10¢

**Door—**  
Bardsley's, Iron, 40¢; Brass and  
Bronze, 25¢  
Empire, 50¢  
Pullman, 25¢  
Richards Mfg. Co., No. 117, 25¢  
ready, 40¢; Nos. 118, 119, Sure  
Grip, 50¢  
Superior, 40¢

**File and Tool—**  
Nicholson File Holders and File  
Handles, 33½¢ 40¢

**Fruit Jar—**  
Triumph Fruit Jar Holder, ½ gross,  
\$18.00; ½ doz, \$2.00

**Trace and Rein—**  
Fernald Double Trace Holder, ½ doz,  
pairs, \$1.25  
Dash Rein Holder, ½ doz, \$1.25

**Hones—Razor—**  
Pike Mfg. Co., Belgian and Swat,  
50%; German, 35½%

**Hooks—Cast Iron—**  
Bird Cage, Reading, 40¢  
Clothes Line, Reading List, 40¢  
Coat and Hat, Reading, 45¢ 20¢  
Coat and Hat, Wrightsville, 60¢ 45¢  
Harness, Reading List, 40¢

**Wire—**  
Belt, Nos. 1 to 15, 75¢ 10¢ 80¢  
Wire C. & H. Hooks, 80¢ 80¢ 40¢  
Bradley Metal Clasp Wire, Coat and  
Hat, 75¢ 10¢ 80¢; Ceiling, 75¢ 10¢ 80¢  
Columbian Hdw. Co., Gem, 75¢ 10¢  
Parker Wire Goods Co., King, 75¢ 10¢  
Wire Goods Co.:  
Acme, 60¢ 10¢; Chief, 70¢ 10¢;  
Crown, 75¢; Czar, 85¢ 10¢;  
Crown, 75¢; Czar Harness, 50%;  
Ceiling, 75¢

**Wrought Iron—**  
Box, 6 in., per doz, \$0.90; 8 in.,  
\$1.15  
Cotton, 100 ft., 100 ft., \$1.25 \$1.50  
Wrought Staples, Hooks, 40¢  
See Wrought Goods.

**Miscellaneous—**  
Hooks, Bench, see Stops, Bench.  
Bush, Light, doz, \$6.20; Medium,  
\$6.75; Heavy, \$7.50  
Grass, best, all sizes, per doz,  
\$2.75 \$3.00  
Grass, common grades, all sizes,  
per doz, \$1.25 \$1.50  
Whiffletree, 100 ft., 100 ft., \$1.50 \$1.60  
Hooks and Eyes:  
Brass, 60¢ 60¢ 10¢  
Malleable Iron, 70¢ 70¢ 10¢  
Covert Mfg. Co. Gate and Scuttle  
Hooks, 40¢  
Turner & Stanton Co. Cup and  
Shoulder, 85¢ 10¢  
Bench Hooks—See Bench Stops.  
Carn Hooks—See Knives, Carn.

**Horse Nails—**  
See Nails, Horse.

**Horseshoes—**  
See Shoes, Horses.

**Hose, Rubber—**  
Garden Hose, ¾-in.,  
Competition, 100 ft., 100 ft., \$1.60 \$1.60  
3-ply Guaranteed, 100 ft., 100 ft., \$1.60 \$1.60  
4-ply Guaranteed, 100 ft., 100 ft., \$1.60 \$1.60  
Cotton Garden, ¾-in., coupled,  
Low Grade, 100 ft., 80¢ 9¢  
Fair Quality, 100 ft., 10¢ 11¢

**Irons— Sad—**  
Frost 4 to 10, 10¢ 10¢ 10¢  
B. B. Sad Irons, 10¢ 10¢ 10¢  
Mrs. Potts', cents per set:  
Nos. 50 53 60 65  
Jap'd Caps, 58 61 65 93  
Tin'd Caps, 91 88 1.01 98  
New England Pressing, 10¢ 5¢ 14¢

**Bar and Corner—**  
Richards Mfg. Co., Bar, 60¢ 10¢;  
Corner, 60¢

**Pinking—**  
Pinking Irons, 60¢ 60¢ 65¢

**Irons, Soldering—**  
See Coppers.

**Jacks, Wagons—**  
Covert Mfg. Co.:  
Auto Screw, 30¢ 2¢; Steel, 45¢  
Lockport, 50¢  
Lane's Steel, No. 120, 50¢ 10¢  
Richards' Tiger Steel, No. 120, 50¢ 10¢  
Smith & Hemenway Co.'s, 50¢

**Ladder—**  
Richards Mfg. Co., Ladder Jacks, 17¢

**Jointers—**  
Pike Mfg. Co., Saw Jointers, \$7.00, 40%

**Kettles—**  
Brass, Spun, Plain, 20¢ 25¢  
Enamelled and Cast Iron—See Ware,  
Hollow.

**Knives—**  
Butcher, Kitchen, &c.—  
Foster Bros' Butcher, &c., 30%  
Wilkinson Shear & Cutlery Co., 60%

**Corn—**  
Columbian Cutlery Co., Wilcutt  
Brand Knives and Hooks, 60%  
American Fork & Hoe Co.:  
Easy Cut, ½ doz, No. 10 C H, \$2.10  
Easy Cut, ½ doz, No. 10 B C H, \$2.20  
Acme, ½ doz, \$2.35  
Dent, ½ doz, \$2.35  
Adjustable, Serrated, ½ doz, \$1.90  
Serrated, ½ doz, \$1.85  
Yankee, No. 1 C H, \$1.35  
Yankee, No. 2 C H, \$1.15

**Drawing—**  
Standard List, 80¢ 10¢—  
C. E. Jennings & Co., Nos. 45, 46,  
25¢ 7½¢  
Jennings & Griffin, Nos. 41, 42,  
60¢ 7½¢  
Swan's, 60¢ 7½¢  
Watrous, 16½¢  
L. & I. J. White, 20¢ 5¢ 25¢

**Hay and Straw—**  
Serrated Edge, per doz, \$5.00 \$5.50  
Iwan's Sickle Edge, ½ doz, \$0.50  
Iwan's Serrated, ½ doz, \$1.00

**Miscellaneous—**  
Farriers', ½ doz, \$2.60 \$3.55  
Wostenholm's, ½ doz, \$3.00 \$3.25

**Knobs—**  
Base, 2½-in., Birch or Maple,  
Rubber Tip, ½ doz, \$1.25 \$1.40  
Carriage, Jap., Drive, all sizes,  
gro, 35¢ 40¢  
Door, Mineral, ½ doz, 65¢ 70¢  
Door, Por. Jap'd, ½ doz, 70¢ 75¢  
Door, Por. Nickel, ½ doz, \$2.05 \$2.15  
Lardale's Wood Door, Shutters, 40¢ 15¢

**Lacing, Leather—**  
See Belting, Leather

**Ladders, Store, &c.—**  
Lane's Store, 25%  
Myers' Noiseless Store Ladders, 50%  
Richards Mfg. Co.:  
Improved Noiseless, No. 112, 50%  
Climax Shelf, No. 113, 50%  
Trolley, No. 109, 50%

**Ladies, Melting—**  
L. & G. Mfg. Co., Melting and  
Plumbers', 25%  
P. S. & W., 40¢ 10¢  
Reading, 60%

**Lamps—**  
Hammer's M. I. Hand, 45%

**Lanterns—Tubular—**  
Regular, No. 0, ½ doz, \$3.50 \$4.00  
Side Light, No. 0, ½ doz, \$4.00 \$4.50  
Hinge Globe, No. 0, ½ doz, \$4.00 \$4.50  
Other Styles, 40¢ 40¢ 10¢

**Bull's Eye Police—**  
3-in., ½ doz, \$3.75 \$4.00

**Latches— Thumb—**  
Roggin's Latches, Jap'd, with  
Screws, ½ doz, 35¢ 40¢

**Door—**  
Cronk & Carrier Mfg. Co., No. 101,  
½ doz, \$2.00  
Richards' Bull Dog, Heavy, No. 125,  
50¢ 55¢  
Richards' Trump, No. 127, \$1.50

**Loaders, Cattle—**  
Small, ½ doz, 50¢; large, 60¢  
Covert Mfg. Co.:  
Cotton, 45%; Hemp, 45%; Jute,  
35%; Sisal, 20%

**Leathers, Pump—**  
See Pumps—

**Lifters, Transom—**  
R. & E., 10%

**Lines—**  
Wire Clothes, Nos. 13 19 20  
100 feet, \$2.30 1.95 1.75  
75 feet, \$1.95 1.65 1.50  
Samson Cordage Works:  
Solid Braided Chalk, Nos. 0 to 3, 40%  
Solid Braided Masons', 30%  
Silver Lake Braided Chalk, No. 0,  
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3,  
\$7.50  
Masons' Lines, Shade Cord, &c.,  
White Cotton, No. 3½, \$1.50; No. 4,  
\$2.00; No. 4½, \$2.50; Colors, No. 3½,  
\$1.75; No. 4, \$2.25; No. 4½, \$2.75;  
Linen, No. 3½, \$2.50; No. 4, \$3.50;  
No. 4½, \$4.50  
Tent and Awning Lines: No. 5,  
White Cotton, \$7.50; Drab Cotton,  
\$8.50  
Clothes Lines, White Cotton: 50 ft.,  
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75  
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;  
100 ft., \$5.25  
Turner & Stanton Co.:  
Solid Braided Chalk, Masons' and  
Awning Lines, 40%  
Clothes Lines, White Cotton, 20%  
Shade Cord, Cotton or Linen, 20%

**Locks— Cabinet—**  
Cabinet Locks, 33½¢ 33½¢ 35¢

**Door Locks, Latches, &c.—**  
NOTE—Net Prices are very often made  
on these goods.  
Reading Hardware Co., 40%  
R. & E. Mfg. Co., 10%

**Padlocks—**  
R. & E. Mfg. Co., Wrought Steel and  
Brass, 15¢ 15¢

**Sash, &c.—**  
Ives' Patent:  
Crescent, 10%  
Automatic Gravity Metal Sash, 10%  
gro, \$19.50  
Window Ventilating, 10%  
Pullman Patent Ventilating Lock, 25%  
Reading Sash Locks, 40%  
Taylor Mfg. Co., Perfect Ventilating,  
½ doz, \$0.75 \$1.00

**Machines—Boring—**  
Com. Up'r't, without Augers, \$2.00 \$2.25  
Com. Ang'l'r, without Augers, \$2.25 \$2.50  
Ford Auger Bit Co., \$2.00  
Jennings', Nos. 1 and 4, 25¢ 7½¢  
Miller's Falls, 5.75  
Snell's, Upright, \$2.65; Angular, \$2.90  
Swan's Improved, 10¢ 10¢

**Corking—**  
Reisinger Invinible Hand Power, ½ doz, \$48.00

**Fence—**  
Williams' Fence Machines, each, \$5.50

**Hoisting—**  
Moore's Anti-Friction Chain Hoist, 30%  
Moore's Hand Hoist, with Lock, 20%  
Moore's Cyclone High Speed Chain  
Hoist, 25%

**Ice Cutting—**  
Chandler's, 12½%

**Washing**  
Boss Washing Machine Co.: Per doz.  
Boss No. 1, \$57.00  
Boss Rotary, \$57.00  
Champion Rotary Banner No. 1, \$57.00  
Standard Champion No. 1, \$50.00  
Standard Perfection, \$27.00  
Cincinnati Square Western, \$33.00  
Uneda American, Round, \$33.00

**Mallets—**  
Hickory, 45¢ 50¢  
Lignumvite, 45¢ 50¢  
Timbers' Hickory and Apple-  
wood, 45¢ 50¢

**Mangers, Stable—**  
Sweet Iron Works, 50%

**Mats, Door—**  
Acme Flexible Steel, 50%  
Elastic Steel (W. G. Co.), new list, 50%

**Mattocks—**  
See Picks and Mattocks.

**Milk Cans—See Cans, Milk.**

**Mills, Coffee, &c.—**  
Enterprise Mfg. Co.:  
Coffee, 20¢ 25¢  
Shell and Corn, 25¢ 10¢  
National list Jan. 1, 1902, 30%  
Parker's Columbia and Victoria, 33%  
Parker's Box and Side, 50¢ 10¢  
Swift, Lane Bros. Co., 30%

**Motors, Water—**  
Divine's Red Devil, 30%  
No. 1, 2, 3, 4, 35%  
Lippincott's:  
No. 1, 2, 3, 4, 35%  
Pike Mfg. Co., Tool and Knife  
Grinding, 33% 33%

**Mowers, Lawn—**  
NOTE—Net prices are generally quoted  
cheapest, 10-in., \$2.00; advance  
10¢ for each size.  
Cheap, 10-in., \$2.25; advance 15¢  
20¢ for each size.  
Better Grade, 10-in., \$3.00; ad-  
vance 25¢ for each size.  
12 14 16 18 4 in.  
High Grade, \$1.50 4.75 5.00 5.25  
Continental, 50%  
Great American, 50%  
Great American Ball B'g, new list, 70%  
Quaker City, 70%  
Pennsylvania, Jr., Ball Bearing, 60%  
Pennsylvania, Jr., Ball Bearing, 50¢ 10¢ 50¢  
Pennsylvania Golf, 50%  
Pennsylvania Horse, 50% 50¢  
Pennsylvania Pony, 40¢ 50¢

**Nails—**  
Wire Nails and Brads, Miscel-  
laneous, 85¢ 85¢ 10%  
Cut and Wire, See Trade Report.  
Hungarian, Finishing, Upholster-  
ers', &c. See Tacks.

**Horse—**  
Nos. 6 7 8 9 10  
Anchor, 23 21 20 19 18, ½ doz, 12¢  
Coleman, 13 12 11 11, ½ doz, 12¢  
New Haven, 23 21 20 19 18, ½ doz, 12¢  
Livingston, 19 18 17 16 16, ½ doz, 12¢  
Western, 19 18 17 16 16, ½ doz, 12¢  
Jobbers' Special Brands, ½ doz, 8¢ 4¢  
per lb. 9¢

**Picture—**  
1½ 2 2½ 3 in.  
Brass Hd. gro, 45 55 60 70  
Por. Head, gro, 1.10 1.10 1.10

**Upholsters—**  
Brass, 30%  
Plated, 30¢ 10%

**Nippers—**  
See Pliers and Nippers.

**Nipples—**  
Standard Nipple Co.:  
Wrought Pipe Nipples, 80%  
Nuts— Blank or Tapped.  
Cold Punched: Off list.  
Square, 3.00  
Hexagon, 3.00  
Square, C. T. & R., 5.00  
Hexagon, C. T. & R., 6.00

**Hot Pressed: Off list.**  
Square, 5.00¢  
Hexagon, 6.00¢

**Oakum—**  
Best, 10¢ 6½¢  
U. S. Navy, 10¢ 6¢  
Navy, 10¢ 5¢  
Plumbers' Spun Oakum, 2½¢ 4¢

**Oil—**  
Pike Mfg. Co., Stonoil, 40%

**Oil Tanks—See Tanks, Oil.**

**Oilers—**  
Steel, Copper Plated, 75¢ 10%  
Chase or Paragon:  
Brass and Copper, 50¢ 10%  
Zinc, 65¢ 10¢ 70%  
Railroad, 60¢ 10¢ 10%  
American Tube & Stamping Co.:  
Spring Bottom Cans, 70¢ 70¢ 10%  
Railroad Oilers, 60¢ 60¢ 10%  
Hero Fruit Jar Co.:  
Spring Bottom Cans, 70¢ 70¢ 10%  
Railroad Oilers, etc., 60¢ 60¢ 10%  
Malleable, Hammers Improved, Nos.  
11, 12 and 13, 10%; Old Pattern,  
Nos. 1, 2, 3, 4, 50%  
Maple City Mfg. Co.:  
Spring Bottom Cans, 70¢ 70¢ 10%  
Railroad Oilers, &c., 60¢ 60¢ 10%

**Openers—Packing Box—**  
Herculeur, ½ doz, \$21.00, 30%

**Can Openers—**  
Per doz.  
Sprague, Iron Handle, 30¢ 35¢  
Sprague, Wood Handle, 40¢  
Sardine Scissors, \$1.75 \$3.00  
Can and Bottle Openers, ½ doz,  
net: Yankee, \$0.75 \$0.85; Little  
Gem, \$0.50 \$0.65; Nifty, \$0.75

**Egg—**  
Hartigan Nickel Plate, ½ doz, \$2.00;  
Silver Plate, \$4.00

**Packing—**  
Asbestos Packing, Wick and  
Rope, any quantity, 16¢ 17¢

**Rubber—**  
(Fair quality goods.)  
Sheet, C. I., 11¢ 12¢  
Sheet, C. O. S., 11¢ 12¢  
Sheet, C. B. S., 12¢ 13¢  
Sheet, Pure Gum, 40¢ 45¢  
Sheet, Red, 40¢ 50¢  
Jenkins' '06, ½ lb, 80¢ 25%

**Miscellaneous—**  
American Packing, 10¢ 70¢ 10¢  
Cotton Packing, 10¢ 10¢ 25¢  
Italian Packing, 10¢ 90¢ 10¢  
Jute, 10¢ 40¢ 10¢  
Russia Packing, 10¢ 90¢ 10¢

**Pails, Water, Well, &c.—**  
See Buckets.

**Paint—**  
Dixon's Silica-Graphite, in 1 gal.  
pails and 5 gal. kegs, 25%; pack-  
ages of larger size, 20%

**Pans— Dripping—**  
Standard List, 75¢ 50¢ 75¢ 10%  
Edwards, Royal Blue, 75¢ 10%

**Fry—**  
Common Lipped: 1 2 3 4 5  
Nos. 100 100 100 100 100  
Per doz, \$0.75 0.85 0.95 1.15 1.30

**Refrigerator, Galva—**  
Inch, 12 14 16 18  
Per doz, \$1.75 2.25 2.80 3.15

**Paper—Building Paper**  
Asbestos: 10¢  
Roll Board or Building Felt,  
6 to 30 lb., per 100 sq. ft., 2½¢  
Roll Board or Building Felt,  
3-32 and ½ in., 45 to 60 lb.,  
per 100 sq. ft., 3½¢  
Mill Board, Sheet, 40 x 40 in.,  
1-32 to ½ in., 3½¢  
Per roll.  
Rostin Sized Sheathing: 500 sq. ft.  
Light weight, 25 lbs. to roll, 48¢ 58¢  
Medium weight, 30 lbs. to roll, 56¢ 70¢  
Heavy weight, 40 lbs. to roll, 75¢ 78¢  
Black Water Proof Sheathing,  
500 sq. ft., 1 ply, 65¢; 2 ply,  
85¢; 3 ply, \$1.10; 4 ply, \$1.25.  
Deafening Felt, 9, 6 and 4½ sq.  
ft. to lb., ton, 85¢ 50¢  
Red Rope Roofing, 250 sq. ft.  
per roll, \$1.75

**Tarred Paper—**  
1 ply (roll 400 sq. ft.), ton, \$34.00 \$38.00  
2 ply, roll 108 sq. ft., 65¢  
3 ply, roll 108 sq. ft., 88¢  
Slater's Felt (roll 500 sq. ft.), 80¢

**Sand Paper and Cloth—**  
Flint and Emery, 50¢ 10%  
Garnet Paper and Cloth, 25%

**Parers—Apple—**  
Goodell Co.:  
Family Bay State, ½ doz, \$15.00  
Improved Bay State, ½ doz, \$36.00  
New Lightning, ½ doz, \$7.00  
Turn Table, ½ doz, \$8.00  
White Mountain, ½ doz, \$5.00  
Romanza Improved, each, \$7.50  
Dandy, each, \$10.00  
Eureka Improved, each, \$20.00  
New Century, each, \$20.00  
Ranger, each, \$30.00



Livingston Nail Co.:	
Daisy	doz. \$4.00
Little Star	doz. \$5.00
Rocking Table	doz. \$6.20
Reading Hardware Co.:	
Advance	doz. \$4.00
Baldwin	doz. \$4.00
Reading 75	doz. \$3.25
Reading 78	doz. \$6.25

<b>Orange—</b>	
Goodell Co., Success	each \$20.00
<b>Potato—</b>	
Saratoga	doz. \$7.00
White Mountain	doz. \$6.00

### Picks and Mattocks—

(List Jan., 1908.)	
List	75¢10%
Cronk's Handled Garden Mattock	doz. \$3.00
	33½%

### Pinking Irons—

See Irons, Pinking.	
<b>Pins, Escutcheon—</b>	
Brass	50¢50¢10%
Iron, list Nov. 11, '85	60¢60¢10%

### Pipe, Cast Iron Soil—

Eastern Prices:	
Standard, 2-6 in.	68%
Extra Heavy, 2-6 in.	74%
Fittings, Standard and Heavy	80¾%

### Pipe, Merchant—

Carloads to Consumers:	
Steel	%
Iron	%
Blk. Galv.	%
Blk. Galv.	%

½ and ¾ in.	%
¾ in.	%
1 in.	%
1 ½ in.	%
2 in.	%
2 ½ in.	%
3 in.	%
4 in.	%
6 in.	%
8 in.	%
10 in.	%
12 in.	%

### Pipe, Vitrified Sewer—

Carload lots.	
Standard Pipe and Fittings, 3 to 2½ in., f.o.b. factory:	
First-class	87%
Second-class	90%

### Pipe, Stove—

Edwards' Nested:	
5 in., Standard Blue	\$7.25
6 in., Standard Blue	7.75
7 in., Standard Blue	7.75
8 in., Standard Blue	7.75
9 in., Standard Blue	7.75
10 in., Standard Blue	7.75
11 in., Standard Blue	7.75
12 in., Standard Blue	7.75
13 in., Standard Blue	7.75
14 in., Standard Blue	7.75
15 in., Standard Blue	7.75
16 in., Standard Blue	7.75
17 in., Standard Blue	7.75
18 in., Standard Blue	7.75
19 in., Standard Blue	7.75
20 in., Standard Blue	7.75
21 in., Standard Blue	7.75
22 in., Standard Blue	7.75
23 in., Standard Blue	7.75
24 in., Standard Blue	7.75
25 in., Standard Blue	7.75
26 in., Standard Blue	7.75
27 in., Standard Blue	7.75
28 in., Standard Blue	7.75
29 in., Standard Blue	7.75
30 in., Standard Blue	7.75
31 in., Standard Blue	7.75
32 in., Standard Blue	7.75
33 in., Standard Blue	7.75
34 in., Standard Blue	7.75
35 in., Standard Blue	7.75
36 in., Standard Blue	7.75
37 in., Standard Blue	7.75
38 in., Standard Blue	7.75
39 in., Standard Blue	7.75
40 in., Standard Blue	7.75
41 in., Standard Blue	7.75
42 in., Standard Blue	7.75
43 in., Standard Blue	7.75
44 in., Standard Blue	7.75
45 in., Standard Blue	7.75
46 in., Standard Blue	7.75
47 in., Standard Blue	7.75
48 in., Standard Blue	7.75
49 in., Standard Blue	7.75
50 in., Standard Blue	7.75
51 in., Standard Blue	7.75
52 in., Standard Blue	7.75
53 in., Standard Blue	7.75
54 in., Standard Blue	7.75
55 in., Standard Blue	7.75
56 in., Standard Blue	7.75
57 in., Standard Blue	7.75
58 in., Standard Blue	7.75
59 in., Standard Blue	7.75
60 in., Standard Blue	7.75
61 in., Standard Blue	7.75
62 in., Standard Blue	7.75
63 in., Standard Blue	7.75
64 in., Standard Blue	7.75
65 in., Standard Blue	7.75
66 in., Standard Blue	7.75
67 in., Standard Blue	7.75
68 in., Standard Blue	7.75
69 in., Standard Blue	7.75
70 in., Standard Blue	7.75
71 in., Standard Blue	7.75
72 in., Standard Blue	7.75
73 in., Standard Blue	7.75
74 in., Standard Blue	7.75
75 in., Standard Blue	7.75
76 in., Standard Blue	7.75
77 in., Standard Blue	7.75
78 in., Standard Blue	7.75
79 in., Standard Blue	7.75
80 in., Standard Blue	7.75
81 in., Standard Blue	7.75
82 in., Standard Blue	7.75
83 in., Standard Blue	7.75
84 in., Standard Blue	7.75
85 in., Standard Blue	7.75
86 in., Standard Blue	7.75
87 in., Standard Blue	7.75
88 in., Standard Blue	7.75
89 in., Standard Blue	7.75
90 in., Standard Blue	7.75
91 in., Standard Blue	7.75
92 in., Standard Blue	7.75
93 in., Standard Blue	7.75
94 in., Standard Blue	7.75
95 in., Standard Blue	7.75
96 in., Standard Blue	7.75
97 in., Standard Blue	7.75
98 in., Standard Blue	7.75
99 in., Standard Blue	7.75
100 in., Standard Blue	7.75

### Planes and Plane Irons—

Wood Planes—	
Bench, first qual.	30¢30¢5%
Bench, second qual.	25¢25¢5%
Molding	25¢25¢5%
Chapin-Stephens Co.:	
Bench, First Quality	30%
Bench, Second Quality	25%
Molding and Miscellaneous	25%
Toy and German	30%
Union	30%

### Iron Planes—

Chapin's Iron Planes	60%
Union	60%

### Plane Irons—

Wood Bench Plane Irons, list	
Dec. 12, '06	25%
Buck Bros	30%
Chapin-Stephens Co.	30%
Union	30%
L. & J. White	30%

### Planters, Corn, Hand—

Kohler's Sclipses	doz. \$7.50
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### Plates—

Felloy	lb. 3¼¢1¼¢
Avery Stamping Co.:	
Standard Wrot. Steel Felloy Plates	in 100 lb. boxes, per 100 lb. ¼ in. to 1½ in., \$4.00 net; 1½ in. to 2 in., inclusive, \$3.75 net.

### Steel Pipe Hook—

Never-Break	75¢10%
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### Pliers and Nippers—

Button Pliers	75¢65¢75¢10¢5%
Gas Burners, per doz., 5 in., \$1.25	
\$1.00; 6 in., \$1.45, \$1.50.	
Gas pipe, 7 8 10 12-in.	\$2.00 \$2.35 \$2.75 \$3.50

### Acme Nippers—

Cronk & Carrier Mfg. Co.:	
American Button	80%
Improved Button	75¢10%
Cronk's	80%
No. 50 Linemen's	50%
Stub's Pattern	45%
Combination and others	33½%
Elmore Tool Mfg. Co.:	
Gas Pliers	70%
Wire and Cutting Pliers	75%
Heiler's Farris' Nippers, Pliers and Tools	40¢50¢40¢10¢5%
P. S. & W. Tinnors' Cutting Nippers	40%
Swedish Side, End and Diagonal Cutting Pliers	50%
Utica Drop Forge & Tool Co.:	
Pliers and Nippers, all kinds	40%

### Plumbs and Levels—

Chapin-Stephens Co.:	
Picnics and Levels	30¢30¢10%
Chapin's Imp. Brass Cor.	40¢40¢10%
Pocket Levels	30¢30¢10%
Extension: Sials	30¢30¢10%
Machinist Levels	40¢40¢10%
Diston & Sons:	
Shifting Levels	60¢10%
Pocket Levels	60¢10%
Plumbs and Levels	60¢10%
Track Level and Gauge	60¢10%
Stanley's Duler	30%
Woods' Extension	33½%

### Points, Glaziers—

Bulk and 1-lb. papers	7b. 9 ¢
¾-lb. papers	7b. 9 ¢
¼-lb. papers	7b. 16 ¢

### Police Goods—

Manufacturers' Lists	25¢25¢5%
Tower's	25%

### Polish—Metal, Etc—

Ladd Co.:	
Putzade Liquid, ½ gro. ¼ pts.	\$12.00; 1 pts. \$20.00; 1 qts. \$40.00;
½ doz. ½ gals. \$6.35; 1 gal. \$12.00.	
Prestoline Liquid, No. 1 (¼ pt.)	doz. \$3.00; No. 2 (1 qt.), \$9.00, 40%
Prestoline Paste	40%
George William Hoffman:	
U. S. Metal Polish Paste, 3 oz. boxes, ½ doz. 50¢; ½ gro. \$4.50;	
½ lb. boxes, ½ doz. \$1.25; 1 lb. boxes, ½ doz. \$2.25.	
U. S. Liquid, 8 oz. cans, ½ doz., \$1.25.	
Barkeepers' Friend Metal Polish, ½ doz., \$1.75.	

### Stove—

Black Eagle Benzine Paste, 5 lb. cans, ½ lb. 10¢	
Black Eagle, Liquid, ¼ pt. cans, ½ doz. 75¢	
Black Jack Paste, ½ lb. cans, ½ gr. \$9.00	
Black Kid Paste, 5 lb. cans, each, \$0.65	
Ladd's Black Beauty Liquid, per 100 tins	\$6.75
Joseph Dixon, ½ gr. \$5.75	
Dixon's Plumbago	½ lb. 8¢
Firestone	½ gr. \$2.50
Gem, ½ gr. \$1.50	
Japanese	½ gr. \$3.50
Jet Black	½ gr. \$3.50
Peerless Iron Enamel, 10 oz. cans, ½ doz., \$1.50	

### Window Polish—

Benj. P. Forbes:	
Glaibright, No. 2, gal. pails, ½ doz., \$21.00; each, \$2.50; 1 lb. cans, each	75¢
Glaibright Powder, bbls., ½ lb. 20¢	

### Poppers, Corn—

1 qt. Square	doz. \$0.80; gro. \$8.75
1 qt. Round	doz. \$0.90; gro. \$10.00
1½ qt. Square	doz. \$1.20; gro. \$12.00
2 qt. Square	doz. \$1.50; gro. \$15.00

### Post Hole and Tree Augers and Diggers—

See also Diggers, Post Hole, etc.	
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### Posts, Steel—

Steel Fence Posts, each, 6 ft., 46¢;	
6 ft., 48¢; 7 ft., 50¢.	
Steel Hitching Posts, each \$1.30	

### Potato Parers—

See Parers, Potato.	
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### Pots, Glue—

Enamelled	40%
Tinned	30¢10%

### Powder—

Black Sporting:	
Kegs (25 lb.), \$5.00 @ 5.50	
Half Kegs (12½ lb.), \$2.75 @ 3.00	
Quarter Kegs (6¼ lb.), \$1.50 @ 1.65	
Canisters, pounds, .25	
Canisters, ½ pounds, .15	
Canisters, ¼ pounds, .12	

### Presses—

Fruit, Wine and Jelly—	
Enterprise Mfg. Co.	20¢25%

### Seal Presses—

Morrill's No. 1, ½ doz., \$20.00	50%
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### Pruning Hooks and Shears—

See Shears.	
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### Pullers, Nail, Etc.—

Cyclops	50%
Elmore Tool Mfg. Co.:	
Drop Forged Track Pullers	10%
Nail Pullers	10%
Miller's Falls, No. 3, ½ doz., \$12.00	40%
Morrill's No. 1, Nail Puller, ½ doz., \$20.00	50%
Pearson No. 1, Cyclone Spike Puller, each \$30.00	50%
The Scranton Co. Case Lots:	
No. 2B (large)	\$5.50
No. 3B (small)	\$5.00
Smith & Hemenway Co.:	
Diamond B.	70%
Giant	50%
Staple Pullers, Utica and Dartson	60%
Taylor Mfg. Co., Sampson Tack	½ doz. \$9.40

### Pulleys, Single Wheel—

Inch	1½ 2 3
Arcting or Tackle,	
doz.	\$0.50 .45 .60 1.05
Hay Fork, Sidel or Solid Eye,	
doz., 4 in., \$1.25; 5 in., \$1.55	
Inch	2 2½ 3 4
Hot House, doz.	\$0.65 .85 1.20
Inch	1½ 2 3 4
Screw, doz.	\$0.16 .19 .23 .26
Inch	1½ 2 3 4
Slide, doz.	\$0.25 .40 .55 .60
Inch	1½ 2 3 4

### Sash Pulleys—

Common Frame: Square or Round End, per doz., 1½ and 2 in.	\$7.00 \$8.00
Anger Mortar, no Face Plate, per doz., 1½ and 2 in.	\$8.00 \$10

### Acme, No. 35, 1½ in., 19¢; 2 in., 20½¢

### American Pulley Co.:

Wrought Steel American Plain	50¢10%
Wrought Steel Eagle	50¢10%
1½ in., 17¢; 2 in., 20¢; 2½ in., 27¢	
Top Notch, Electrically Welded	
Nos. 3 and 4, ½ doz., 19¢	
Common Sense	½ doz. 20¢
Merit	½ doz. 24 in.
For All Steel, Nos. 3 and 7, 2 in.	½ doz. 50%

### Grand Rapids All Steel Noiseless

Niagara, No. 25, 1½ in., 19¢; 2 in., 20½¢	
No. 26 Troy, 1½ in., 14¢; 2 in., 16½¢	
Star, No. 26, 1½ in., 19¢; 2 in., 20½¢	
Tackle Blocks—See Blocks.	

### Pumps—

Cistern	60%
Pitcher Spout	75¢10¢50¢
Wood Pumps, Tubing, etc.	50%
Barnes Bid. Acting (low list)	50%
Barnes Pitcher Spout	80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co.	\$16.00
Daisy Spray Pump	½ doz. \$6.50
Plint & Walling's Fast Mail Hand (low list)	50¢5%
Plint & Walling's Fast Mail (low list)	50¢5%
Plint & Walling's Tight Top	50%
Pitching	50%
National Specialty Mfg. Co., Measuring, Nos. 2, \$6.00; 3, \$5.50	30%
Myers' Pumps (low list)	50%
Myers' Power Pumps	50%
Myers' Spray Pumps	50%

### Pump Leathers—

Plunger and Valve Leathers—Per gro.	
No.	1 2 3 4
	\$5.00 6.00 7.00 8.00

### Cup Leathers—Per 100:

Inch	2½ 3 3½ 4
	\$5.00 7.00 9.00 12.00

### Punches—

Saddlers' or Drive, good,	doz. 50¢75¢
Spring, single tube, good qual.	1½ doz. \$1.75
Revolving (4 tubes)	doz. \$3.50
Hemis & Call Co.'s Cast St'l Drive	50%
Elmore Tool Mfg. Co.:	
Machinists' Center	40%
Tinners' Solid, 50%; Prick	50%
Morrill's Nos. 1A, 1A, 1B, 1C	50%
1D, \$15.00	50%
Hercules, die each \$5.00	50%
Niagara Hollow Punches	50%
Niagara Solid Punches	55¢10%
Tinners' Hollow P. S. & W. Co.	40%
Tinners' Solid, P. S. & W. Co.	40%
doz., \$1.44	40%

### Rail—Barn Door, &c.—

Sliding Door, Painted Iron,	2½¢2¼¢
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### Sliding Door, Wrought Brass,

1½ in., lb. 35¢	30%
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### Cronk's:

Double Braced Steel Rail, ½ ft. 2¼¢	
O. N. T. Rail	2¼¢
Griffin's:	
xxx, ½ 100 ft., 1 x 3-16 in., \$3.25;	
1½ x 3-16 in., \$3.75	
Hinged Hanger, ½ 100 ft., 1 x 3-16 in.,	
1½ x 3-16 in., \$3.75	
Spring, single tube, good qual.	doz. 50@75¢

**Sausage Stuffers or Fillers**See *Stuffers or Fillers, Sausage.***Saw Frames—**See *Frames, Saw.***Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Saws—**

Atkins':	
Circular	45%
Band	50@50.10
Butcher Saws	50%
Cross Cuts	35%
One-Man Cross Cut	40%
Narrow Cross Cut	50%
Hand, Rip and Panels	55.5%
Miter Box and Compass	40%
Mulay, Mill and Drag	45%
Wood Saws	40.10
Chapin-Stephens Co.:	
Turning Saws and Frames	30@30.10
Diamond Saw & Stamping Works:	
Sterling Kitchen Saws	30.10@10%
Diston's:	
Circular, Solid and Ins'ted Tooth	50%
Band, 2 to 18 in. wide	60%
Band, 1/4 to 1 1/2	60%
Crosscuts	45%
Narrow Crosscuts	45%
Mulay, Mill and Drag	40%
Framed Woodsaws	30%
Woodsaw Blades	25%
Woodsaw Rods, Tinned	15%
Hand Saws, Nos. 12, 9, 9, 16, d100	
DB, 120, 76, 7, 8	25%
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1	
0, 60, Combination	30%
Compass, Key Hole, &c.	35.5%
Hand Ice Saws	45%
Butcher Saws and Blades	30%
C. E. Jennings & Co.'s:	
Back Saws	16%
Butcher Saws	35.75%
Compass and Key Hole	35.75%
Framed Wood Saws	23.75%
Hand Saws	12%
Wood Saw Blades	33.75%
Millers Falls:	
Butcher Saws	15.10
Star Saw Blades	15.10
Massachusetts Saw Works:	
Victor Kitchen Saws	10.10@50%
Butcher Saws and Blades	35.40
Peace & Richardson's Hand Saws	30%
Simonds':	
Circular Saws	45%
Crescent Ground Cross Cut Saws	30%
One-Man Cross Cuts	40.10
Gang Mill, Mulay and Drag Saws	45%
Band Saws	50%
Back Saws	25@25.75
Butcher Saws	35@35.75
Hand Saws	25@25.75
Hand Saws, Bay State Brand	45%
Compass, Key Hole, &c.	25@25.75
Wood Saws	40.75
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws	50%

**Hack Saw Blades and Frames—**

Atkins' Hack Saw Blades A A A	25%
Diston's:	
Concave Blades	25%
Chromol Blades	25%
Hack Saw Frames	11%
Simonds, 25%: The Best	35%
Culley	35%
C. E. Jennings & Co.'s:	
Hack Saw Frames, Nos. 175, 180	40.75%
Hack Saws, Nos. 175, 180, complete	40.75%
Goodell's Hack Saw Blades	40.10
Griffin's Hack Saw Frames	35.5@10%
Griffin's Hack Saw Blades	35.5@10%
Star Hack Saws and Blades	15.10
Sterling Hack Saw Blades	30.10@5%
Sterling Power Hack Saw Machines	
each, No. 1, \$25.00; No. 2, \$30.00	10%
Victor Hack Saw Blades	20%
Victor Hack Saw Frames	40%
Whittaker Mfg. Co.:	
National Hand Blades, Hand Frames, Power Blades	40%

**Scroll—**

Barnes, No. 7, \$15	25%
Barnes' Scroll Saw Blades	40%
Barnes' Velocipede Power Scroll Saw, without boring attachment	11%
with boring attachment	20%
Leater, complete, \$10.00	15.10
Rogers, complete, \$3.50 and \$10.00	15.10

**Scales—**

Union Platform, Plain	\$2.10 @ \$2.20
Union Platform, Stpd.	\$2.20 @ \$2.30
Chatillon's:	
Eureka	25%
Favorite	40%
Grocers' Trip Scales	50%
The Standard Portables	40%
The Standard R. R. and Wag-	

**Scrapers—**

Box, 1 Handle	doz. \$1.55 @ \$2.10
Box, 2 Handle	doz. \$2.35 @ \$2.50
Ship, Light, \$2.00; Heavy, \$1.50	
Chapin-Stephens Co., Box	30@30.10
Richards Mfg. Co., Foot	60%

**Screws—Bench and Hand**

Bench, Iron, doz., 1 in.	\$2.50
2.75; 1 1/4, \$3.00 @ 3.25; 1 1/2	
Bench, Wood	80@20.10
Hand, Wood	70@10@70.10
Chapin-Stephens Co., Hand	70@70.10
Coach, Lag and Hand Rail—	
Lag, Cone Point	80@10
Coach, Gimlet Point	80@5
Hand Rail	70@10@75
Jack Screws—	
Standard List	70@10@75
Millers Falls	50.10@10%
Sweet Iron Works	70@75

**Machine—**

Cut Tread, Iron, Brass or Bronze:	
Flat Head or Round Head	
Fillister Head	50@50.10
Roller Thread, F. H. or R. H.	40.10@10%
Iron	75.10
F. H. or R. H., Brass, Nos. 8 to 14	65.10

**Set and Can—**

Set (Iron)	75.10@75.10
Set (Steel), not advance over	25%
Iron	70.10@75.10
Sq. Hd. Cap	70.10@75.10
Hex. Hd. Cap	70.10@75.10
Rd. Hd. Cap	60.75
Fillister Hd. Cap	60.75

**Wood—**

List July 23, 1903.	
Flat Head, Iron	87.45@45
Round Head, Iron	85.50
Flat Head, Brass	80.50
Round Head, Brass	77.45@45
Flat Head, Bronze	75.50
Round Head, Bronze	72.45@45
Drive Screws	87.45@45

**Scroll Saws—**

See <i>Saws, Scroll.</i>	
Scythes—	
Plain Grass, Cutting Edge Polished	\$6.25 @ \$6.50
Clipper, Bronzed Web	\$6.50 @ \$6.75
Solid Steel, Web and Backs Polished	\$7.00 @ \$7.25
Bush, Weed and Bramble, Painted	\$6.50 @ \$6.75
Grain, Painted, Cutting Edge Polished	\$8.25 @ \$8.50
Clipper Grain, Bronze Web	\$8.50 @ \$8.75

**Seeders, Raisin—**

Enterprise	25@30%
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**Sets—Awl and Tool—**

Fray's Tool Handles, Nos. 1, \$12; 2, \$16; 3, \$12	50%
Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18.20	10%

**Garden Tool Sets—**

American Fork & Hoe Co.	
Rake, Shovel and Hoe, 3 doz. sets, No. 3 P F	37.25

**Sets, Nail—**

Octagon	gro. \$3.50 @ \$3.75
Back Bros.	2.75
Elmore Tool Mfg. Co.	30%
Mayhew's	30%
Snell's Corrugated, Cup Pt.	40.10
Snell's Knurled, Cup Pt.	40.10
Victor Knurled, Cup Pt.	30%

**Rivet—**

Regular list	75@75.10
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**Saw—**

Atkins':	
Criterion	40%
Adjustable	40%
Diston's Star, Monarch and Triumph	30%
Giant Royal Cross Cut	40.75
Morrill's No. 1	15.50
Nos. 3 and 4, Cross Cut	22.60
No. 5, Mill	30.00
Nos. 10, 11, 95	15.60
No. 1 Old Style	10.00
Special	16.25
Royal, Hand	40.75
Seymour Smith & Son's	65%
Taintor Positive	40.75

**Shaving**

Fox Shaving Sets, No. 30	
Smith & Hemenway Co.'s	75%

**Sharpeners, Knife—**

Pike Mfg. Co.:	
Fast Cut Pocket Knife Hones	1.50
Hones, 3 doz.	1.50
Mounted Kitchen Sand Stone	1.50
Natural Grit Carving Knife	3.00
Quick Cut Emery Carving Knife Hones, 3 doz.	1.50
Quick Edge Pocket Knife Hones, 3 doz.	2.50

**Skate—**

Smith & Hemenway Co., Eureka	50%
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**Shaves, Spoke—**

Iron	doz. \$1.25
Wood	doz. \$2.00
Bailey's (Stanley R. & L. Co.)	45%
Chapin-Stephens Co.	30@30.10
Goodell's	30.10
Seymour Smith & Son's	50%

**Shears—**

Cost Iron	7 8 9 in.
Best	\$16.00 18.00 20.00 gro.
Good	\$13.00 15.00 17.00 gro.
Cheap	\$5.00 6.00 7.00 gro.
Straight Trimmers, &c.	
Best quality Jap.	70@10.50
Best Quality Nickel	60@10.50
Tailors' Shears	40@10.50
Acme Cast Shears	10@40.50
Columbian Cutlery Co.:	
Grass	30@10.50
Horse or Mule	50@10
W. H. Compton Shear Co.:	
Japan Handles, Nickel Blades	60@10.50
Full Nickel	50@10.50
Heinrich's Tailor's Shears	10%
National Cutlery Co.'s Nickel Plated	60@10
J. W. & Sons Co.:	
Best Quality Jap d.	50@10
Best Quality Nickel	50@10
Tailors	25%

**Tinners' Snips—**

Steel Blades	60@10.50
Steel Laid Blades	50@10
Acme Cast Snips	10@45.50
W. H. Compton Shear Co., Forged	60@7
Steel Handles	35%

Forged Handles, Steel Blades, Berlin	50%
Heinrich's Snips	40%
Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in.	33.5@75
National Cutlery Co.'s Forged Steel	50%
Niagara Snips	40%
P. S. & W. Forged Handies	25%
W. R. W.	50%
J. W. & Sons Co.:	
W. W. Forged Steel	25%

**Pruning Shears—**

Columbian Cutlery Co.:	
Hedge, Wilcut Brand	60@10%
Lawn and Border, Wilcut Brand	60@10%
W. H. Compton Shear Co., Dropped	35%
Forged Steel	35%
Cronk's Hand Shears	33%
Cronk's Wood Handle Shears	33%
Diston's Combined Pruning Hook and Saw, 3 doz.	13.00
Diston's Pruning Hook only	30%
J. T. Henry Mfg. Co.:	
Pruning Shears, all grades	40%
P. S. & W. Co.	40@10%
Seymour Smith & Son's, Hand Shears	70%
Standard Tree Pruners	75@10%
Wood Handle Pruning Shears	40%

**Sheaves—Sliding Door—**

Reading	10%
R. & E. list	15%

**Sliding Shutter—**

Reading list	40%
R. & E. list	15%

**Shells—Shells, Empty—**

Brass Shells, Empty:	
Climax, 10 and 12 gauge	60.5%
Club, Rival, 65.5%; First Quality	60.5%

**Paper Shells, Empty—**

New Rapid, 10, 12, 16 and 20 gauge	25.10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge	25.5%
Leader grade	25.5%
Union, League, 10 and 12 gauge	25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade	20%

**Shells, Loaded—**

Loaded with Black Powder	40%
Loaded with Smokeless Powder, medium grade	40.5%
Loaded with Smokeless Powder, high grade	40.5@10%

**Union Metallic Cartridge Co.:**

New Club, Black Powder	40%
Nitro Club, Smokeless Powder	40.5%
Arrow, Smokeless Powder	40.10%
Winchester:	
Smokeless Repeater Grade	40.5%
Smokeless Leader Grade	40.10%
Black Powder	40%

**Shingles, Metal—Per Sq.**

Edwards Mfg. Co.:	
14 x 20	Painted. Galv. \$4.25 \$4.50
10 x 14	4.50 6.25
7 x 10	4.75 6.50
Wheeling Corrugating Co.:	
Dixie, 14 x 20 in.	\$1.05 \$5.05
Dixie, 10 x 14 in.	4.25 5.45
Dixie, 7 x 10 in.	5.25 6.70

**Shoes, Horse, Mule, &c.—**

F.O.B. Pittsburgh:	
Iron	per keg \$4.10
Steel	per keg \$3.85
Burden's, all sizes	per keg \$3.90

**Shot—**

Drop, up to B.	25-lb. bag. \$1.70
Drop, B and larger	1.35
Buck	1.95
Chilled	1.95
Dust	2.50

**Shovels and Spades—**

Association List	40.75 @ 40.10
Avery Stamping Co.	40%

**Snow Shovels—**

Long Handle	\$2.50 @ \$2.75
Wood and Mail, D Handle	\$2.65 @ \$2.90

**Sieves and Sifters—**

Hunter's Imitation, gro.	\$9.50
Hunter's Genuine, per gro.	\$12.00

**Sifters, Ash—**

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each	\$3.25
3 doz.	\$30.00

**Sieves, Seamless Metallic—**

Per dozen:	
Mesh	1 1/2 1 3/4 1 1/2 1 3/4 1 1/2 1 3/4
Iron Wire	\$1.05 1.05 1.10 1.10
Tinned Wire	\$1.15 1.15 1.20 1.20

**Sieves, Wooden Rim—**

Nested, 10, 11 and 12 Inch.	
Mesh 18, Nested	doz. \$0.90 @ 0.95
Mesh 20, Nested	doz. \$1.00 @ 1.05
Mesh 24, Nested	doz. \$1.30 @ 1.40

**Sinks, Cast Iron—**

Painted, Standard list:	
12 x 12 to 24 x 33 in.	60%
24 x 24 to 24 x 30 in.	50%
24 x 30 to 24 x 36 in.	50%
Barnes' low list	60%

**NOTE—There is not entire uniformity in sizes used by jobbers.****Skids, Wagon—**

Cast Iron	70 @ 70.10
Steel	35 @ 40%

**Slates, School—**

Factory Shipments	
"D" Slates	50 @ 50.10
Eureka, Unexcelled Noiseless	60@7
Victor A, Noiseless	60@7

**Slaw Cutters—See Cutters.****Snaps, Harness—**

German	40 @ 40.10
Covert Mfg. Co.:	
Derby, 25%: Yankee, 30.2%; Yankee	
Roller, 30.2%	
High Grade, 40%: Trojan	40%
Jockey	25%

**Snaths—**

Grass Scythe	50 @ 50.5%
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**Snips, Tinners—See Shears.****Spoons and Forks—****Silver Plated—**

Good Quality	50.10 @ 60.65
Cheap	60 @ 60.10
International Silver Co.:	
1817 Rogers Bron.	40.10
Rogers & Wro., William Rogers	50.10
Eagle Brand	50.10
Anchor, Rogers Brand	60%
Wm. Rogers & Son	60.10

**Miscellaneous**

German Silver	60 @ 60.65
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## Scythe Stones—

Pike Mfg. Co., 1907 list:	
Black Diamond S. S. . . . .	gro. \$12.00
Lamouille S. S. . . . .	gro. \$11.00
White Mountain S. S. . . . .	gro. \$9.50
Green Mountain S. S. . . . .	gro. \$7.00
Extra Indian Pond S. S. . . . .	gro. \$5.00
No. 1 Indian Pond S. S. . . . .	gro. \$7.50
No. 2 Indian Pond S. S. . . . .	gro. \$5.00
Leader Red End S. S. . . . .	gro. \$5.00
Quick Cut Emery . . . . .	gro. \$10.00
Pure Corundum . . . . .	gro. \$18.00
Crescent . . . . .	\$7.00
Emery Scythe Rifles, 2 Coats . . . . .	\$8.00
Emery Scythe Rifles, 3 Coats . . . . .	\$11.00
Emery Scythe Rifles, 4 Coats . . . . .	\$13.00
Balance of 1907 list 33 1/2% . . . . .	
Lectro (Artificial), per doz. . . . .	\$12.00 33 1/2%
Lightning (Artificial), per doz. . . . .	\$18.00 33 1/2%

## Stoppers, Bottle—

Victor Bottle Stoppers . . . . .	per doz. \$9.00
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## Stops—Bench—

Millers Falls . . . . .	15¢ 10%
Morrill's, per doz., No. 1 . . . . .	\$10.00 50%
Morrill's, No. 2, 12 doz. . . . .	\$12.50
Seymour Smith & Son's . . . . .	60%

## Door—

Chapin-Stevens Co. . . . .	50¢ 50¢ 10%
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## Plane—

Chapin-Stevens Co. . . . .	20%
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## Straps—Box—

Acme Embossed, case lots . . . . .	20¢ 10¢ 10%
Cary's Universal, case lots . . . . .	20¢ 10¢ 10%

## Stretchers, Carpet—

Cost Iron, Steel Points . . . . .	dos. 55¢
All Steel Sockets . . . . .	dos. \$2.00 @ 2.25
Excelsior Stretcher and Tack Hammer Combined, per doz. . . . .	\$6.00 30%

## Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and	
Lard Presses . . . . .	25¢ 25¢ 7 1/2%
National Specialty Co., list Jan. 1,	
1902 . . . . .	30¢ 35%
P. S. & W. Co. . . . .	40¢ 10¢ 5%

## Sweepers, Carpet—

Goshen Sweeper Co. . . . .	Per doz.
Gilt Edge . . . . .	\$27.00
Superline . . . . .	36.00
Majestic . . . . .	24.00
Select, Nickel . . . . .	22.00
National Sweeper Co. . . . .	
National Queen, Nickle . . . . .	\$27.00
Martha Washington, Nickle . . . . .	25.00
Monarch, Japanned . . . . .	20.00
Perpetual, Japanned . . . . .	18.00
Streator Metal Stamping Co. . . . .	
Model E, Sanitary . . . . .	\$25.00
Eureka . . . . .	15.00
Streator Majestic, Nickle . . . . .	24.00
Streator Conqueror, Japanned . . . . .	22.00

NOTE.—Leading Manufacturers give the following rebates from list prices: 50¢ per dozen on three-dozen lots; \$1 per dozen on five-dozen lots; \$2 per dozen on ten dozen lots

## Tacks, Finishing Nails, &amp;c.

American Carpet Tacks . . . . .	90¢ 25¢ 0%
American Cut Tacks . . . . .	90¢ 25¢ 0%
Sveedes' Cut Tacks . . . . .	90¢ 25¢ 0%
Sveedes' Upholsterers' . . . . .	90¢ 25¢ 0%
Gimp Tacks . . . . .	90¢ 25¢ 0%
Lace Tacks . . . . .	90¢ 25¢ 0%
Trimmers' Tacks . . . . .	90¢ 25¢ 0%
Looking Glass Tacks . . . . .	90¢ 25¢ 0%
Bill Posters' and Railroad Tacks . . . . .	90¢ 25¢ 0%
Hungarian Nails . . . . .	90¢ 25¢ 0%
Finishing Nails . . . . .	90¢ 25¢ 0%
Trunk and Clout Nails . . . . .	75¢ 50¢ 0%

NOTE.—The above prices are for Straight Weights.

## Miscellaneous—

Double Pointed Tacks . . . . .	90¢ 25¢ 0%
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See also Nails, Wire.

## Tanks, Oil and Gasoline—

Wilson & Friend Co.:	
Gal. Gasoline . . . . .	Oil
50 . . . . .	\$2.75 \$3.00
60 . . . . .	\$3.50 \$4.00
110 . . . . .	\$5.00 \$5.75

## Tapes, Measuring—

American Asses' Skin . . . . .	50¢ 0%
Patent Leather . . . . .	25¢ 20¢ 5%
Steel . . . . .	35¢ 45¢ 5%
Chesterman's . . . . .	25¢ 25¢ 5%
Keuffel & Esser Co. . . . .	
Favorite, Ass Skin . . . . .	40¢ 10¢ 50%
Favorite, Duck and Leather . . . . .	25¢ 25¢ 10%
Metallic and Steel, lower list, 35¢ . . . . .	35¢ 55¢ 5%
Lufkins:	
Asses' Skin . . . . .	40¢ 10¢ 50%
Metallic . . . . .	30¢ 30¢ 5%
Patent Bend, Leather . . . . .	25¢ 25¢ 10%
Pocket . . . . .	40¢ 40¢ 5%
Steel . . . . .	35¢ 35¢ 5%
Wieburch & Hilzer:	
Chesterman's Metallic, No. 31L . . . . .	25%
etc. . . . .	
Chesterman's Steel, No. 1028L . . . . .	25%
etc. . . . .	

## Teeth, Harrow—

Steel Harrow Teeth, plain or	
headed, 1/4-inch and larger	
per 100 lb. . . . .	\$2.55 @ \$2.80

## Thermometers—

Tin Case, Cabinet, Flanne.	
Dairy, &c. . . . .	30¢ 35%

## Ties, Bale—Steel Wire—

Single Loop . . . . .	\$2 1/4¢ 10%
Monitor, Cross Head, &c. 70¢ 2 1/4%	

## Tinners' Shears, &amp;c.—

See Shears, Tanners', &c.	
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## Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

## Tire Benders, Upsetters, &amp;c.

See Benders and Upsetters, Tire.

## Tools—Coopers—

L. & I. J. White . . . . .	20¢ 20¢ 5%
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## Haying—

Myers' Hay Tools . . . . .	50%
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## Ice Tools—

Gifford-Wood Co. . . . .	15%
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## Miniature—

Smith & Hemenway Co.'s, David-	
son, per doz., Nickel Plated, \$1.50;	
Gold Plated . . . . .	\$2.00

## Saw—

Atkins' Cross Cut Saw Tools . . . . .	35¢ 5%
Simond's Improved . . . . .	33 1/2%
Simond's Crescent . . . . .	30%

## Ship—

L. & I. J. White . . . . .	25%
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## Torches—

Hammers, Engine, per doz. . . . .	\$4.50
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## Transom Lifters—

See Lifters, Transom.

## Traps—Fly—

Balloon, Globe or Acme, doz. . . . .	\$1.15 @ \$1.25; gro. \$11.50 @ \$12.00
Harper, Champion or Paragon, doz. . . . .	\$1.25 @ \$1.40; gro. \$13.00 @ \$13.50

## Game—

Imitation Oneida . . . . .	75¢ 10%
Newhouse . . . . .	30¢ 5%
Hawley & Norton . . . . .	35¢ 10%
Victor . . . . .	35¢ 75¢ 10%
Oneida Community Jump . . . . .	70¢ 5%
Stop Thief . . . . .	60%
Tree Trap . . . . .	80%
Hector . . . . .	15¢ 75¢ 10%

## Mouse and Rat—

Mouse, Wood, Choker, doz. holes . . . . .	12¢
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## Mouse, Round or Square Wire—

doz. 85¢ 90¢	
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## Marty French Rat and Mouse Traps

(Genuine), per doz. . . . .	
Crates lots. Small lots.	
No. 1, Rat . . . . .	\$11.50 \$14.50
No. 3, Rat . . . . .	\$5.75 \$6.50
No. 3 1/2, Rat . . . . .	\$1.70 \$2.25
No. 5, Mouse . . . . .	\$2.25 \$3.00

## Animal Trap Co.:

Out o' Sight, Mouse, per doz. . . . .	\$0.60
Out o' Sight, Rat, per doz. . . . .	1.20
Easy Set, Mouse, per doz. . . . .	.35
Easy Set, Rat, per doz. . . . .	.85
Out o' Sight Chokers, per doz. . . . .	
holes . . . . .	.12
Out o' Sight, Tin, 5-hole, per doz. . . . .	.75
traps . . . . .	

## Trowels—

Disston Brick and Pointing . . . . .	25%
Disston Plastering . . . . .	20%
Disston "Standard Brand" and Gar-	
den Trowels . . . . .	30%
Kohler's Steel Garden Trowels, per doz. . . . .	\$3.00
5 in. \$4.50; 6 in. \$6.00	
New York Forged Steel Garden	
Trowels, in built, net per doz. . . . .	\$5.50
In 1 doz. boxes . . . . .	per doz. \$6.00
Woodrough & McParlin, Plastering . . . . .	25%

## Trucks, Warehouse, &amp;c.—

B. & L. Block Co.:	
New York Pattern . . . . .	50¢ 10%
Western Pattern . . . . .	60¢ 10%
Handy Trucks . . . . .	per doz. \$16.00
Grocery . . . . .	per doz. \$15.00
McKinney Trucks . . . . .	each, net \$10.00
Model Store Trucks . . . . .	per doz. \$18.50

## Tubs, Wash—

M'P'or's list, price per gross.	
No. 0 1 2 3	
Galvanized, 60¢ 70¢ 80¢ 100¢ 10¢ 7 1/2%	
60¢ 5%	

## Twine, Miscellaneous—

Flax Twine:	
No. 9, 1/4 and 1/2-lb. Balls . . . . .	21¢ @ 23¢
No. 12, 1/4 and 1/2-lb. Balls . . . . .	19¢ @ 21¢
No. 18, 1/4 and 1/2-lb. Balls . . . . .	16¢ @ 18¢
No. 24, 1/4 and 1/2-lb. Balls . . . . .	15¢ @ 17 1/2%
No. 36, 1/4 and 1/2-lb. Balls . . . . .	15¢ @ 17 1/2%
Chalk Line, Colt's . . . . .	14-lb.
Balls . . . . .	24¢ @ 29¢
Cotton Mops, 6, 9, 12 and 15 lb.	
to doz. . . . .	8 1/2¢ @ 19¢
Cotton Wrapping, 5 Balls to lb.	
according to quality . . . . .	12 1/2¢ @ 19¢
American 2-Ply Hemp, 1/4 and	
1/2-lb. Balls . . . . .	12 1/2¢ @ 18¢
American 3-Ply Hemp, 1-lb	
Balls . . . . .	13 1/4¢ @ 16¢
India 2-Ply Hemp, 1/4-lb. Balls	
(Spring Twine) . . . . .	7 1/4¢ @ 9¢
India 3-Ply Hemp, 1-lb. Balls	
. . . . .	7 1/4¢ @ 9¢
2, 3, 4 and 5-Ply Jute, 1 1/4-lb.	
Balls . . . . .	9¢ @ 17 1/2%
Mason Line, Linen, 1/2-lb. Rts. 17¢	
No. 2 1/2 Mattress, 1/4 and 1/2 lb.	
Balls, according to quality . . . . .	30¢ @ 60¢
Wool, 5 to 6 ply . . . . .	B 6¢; A 7 1/2¢

## Vises—

Solid Box . . . . .	60¢ 60¢ 10%
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## Parallel—

Athol Machine Co.:	
Simpson's Adjustable . . . . .	40%
Standard . . . . .	40%
Amateur . . . . .	50%
Columbian . . . . .	40¢ 5%
Slide . . . . .	65%
Fisher & Norris Double Screw, net	
each Nos. 2, \$10.50; 3, \$16.00; 4,	
\$20.50; 5, \$27.00; 6, \$32.00.	

## Fulton Mach. &amp; Vise Co.:

F. & R. Double Swivel Ma-	
chinalists' . . . . .	40%
Star, Solid Jaw, Machinists' . . . . .	40%
Hilalists' . . . . .	40%
Machinists' . . . . .	40¢ 40¢ 5%
Keystone . . . . .	65¢ 50¢ 7 1/2%
Lewis Tool Co.:	
Adjustable Jaw . . . . .	30%
Monarch, 50%; Solid Jaw . . . . .	30%
Massey Vise Co.:	
Parallel Bar . . . . .	40%
Perfect, 15%; Lightning Grip . . . . .	15%
Merrill's . . . . .	25%
Millers Falls Oval Slide Pattern . . . . .	60¢ 10%
Parker's . . . . .	25%
Victor, 20¢ 25%; Regulars . . . . .	20¢ 25%
Vulcan's . . . . .	40¢ 40%
Combination Pipe . . . . .	25¢ 00%
Prentiss . . . . .	20¢ 25%
Rock Island . . . . .	25%
Snediker's X. L. . . . .	33 1/2%
Stephens' . . . . .	33 1/2%

## Saw Filers

Disston's D 3 Clamp and Guide, per	
doz., \$24.00, 30%; Clamps . . . . .	30%
Perfection Saw Clamps, per doz. . . . .	\$1.50
Reading . . . . .	60%

## Wood Workers—

Fulton Mach. & Vise Co.:	
F. & R. Double Swivel Coach-	
man's . . . . .	40%
Star Solid Jaw Woodworkers' . . . . .	60%
Massey Vise Co.:	
Lightning Grip, 15%; Perfect . . . . .	15%
Wyman & Gordon's Quick Action, 6	
in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.	

## Miscellaneous—

Fulton Machine & Vise Co., Com-	
bination Pipe . . . . .	70%
Holland's Combination Pipe . . . . .	60¢ 60%
Massey's Quick Action Pipe . . . . .	40%
Parker's Combination Pipe . . . . .	40%
87 Series, 60%; 187 Series, 60¢ 5%; No.	
870, 40% . . . . .	1.50
Rock Island Pipe . . . . .	25%

## Wads—Price per M.

B. E., 11 up . . . . .	60¢
B. E., 9 and 10 . . . . .	70¢
B. E., 8 . . . . .	80¢
B. E., 7 . . . . .	80¢
P. E., 11 up . . . . .	\$1.00
P. E., 9 and 10 . . . . .	1.25
P. E., 8 . . . . .	1.50
P. E., 7 . . . . .	1.50
Ely's B. E., 11 and larger . . . . .	\$1.70 @ 1.75
Ely's P. E., 12 to 20 . . . . .	\$3.00 @ 3.25

## Ware, Hollow—

Cast Iron, Hollow—	
Store Hollow Ware:	
Enameled . . . . .	45¢ 10%
Ground . . . . .	50¢ 5%
Plain or Unground . . . . .	60%
Country Hollow Ware, per 100	
lbs . . . . .	\$2.75 @ \$3.00

## White Enameled Ware:

Mainline Kettles . . . . .	65¢ 10%
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## Covered Wares:

Tinned and Turned . . . . .	35¢ 10%
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## Enamels—

See also Pots, Glue.	
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## Enameled—

Agate Nickel Steel Ware . . . . .	33 1/2%
Al-gange . . . . .	60¢ 10%
Iron . . . . .	70¢ 10%
Lava and Volcanic, Enamelled . . . . .	40¢ 10%

## Tea Kettles—

Galvanized Tea Kettles:	
Inch . . . . .	6 7 8 9
Each . . . . .	45¢ 50¢ 55¢ 65¢

## Steel Hollow Ware—

Avery Stamping Co.:	
Never-Break Spiders and Grid-	
dies . . . . .	65¢ 10%
Steel Kettles, Mainline . . . . .	70¢ 10%
Bowls, Tin'd . . . . .	80%
Steel Stew Pans, Stew Pots, etc. . . . .	50%
Porcelainized . . . . .	50%
Cleveland Stamping & Tool Co.:	
Solid Steel Spiders and Grid-	
dies . . . . .	65¢ 5%
Solid Steel Kettles . . . . .	60¢ 5%

## Warmers, Foot—

Pike Mfg. Co., Soapstone . . . . .	40¢ 40¢ 10%
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## Washboards—

No.
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